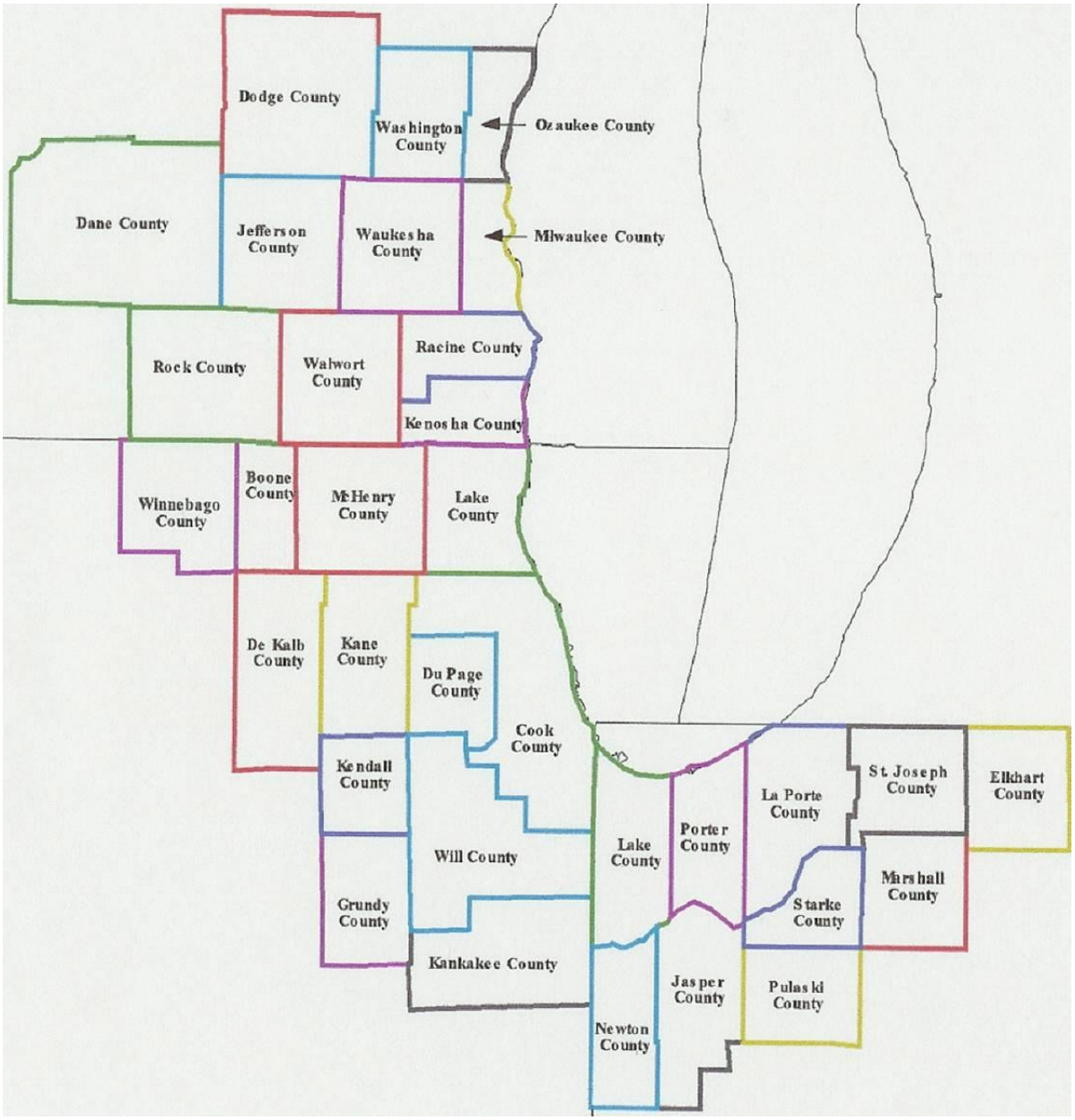


REGION 54 SOUTHERN LAKE MICHIGAN
PUBLIC SAFETY 700 MHz RADIO COMMUNICATIONS PLAN

Date of Plan Approval
XXXX

Chris Kindelspire
Director Electronic Operations
Grundy County ETSB
78 W Lowery Rd
Morris, IL 60450
815-405-0998
ckindelspire@grundy911.org

Scope

1.1 Introduction

This is the second major planning thrust for Region 54. The first was to meet the Federal Communications Commission (FCC) requirements for the NPSPAC spectrum. This planning thrust was precipitated by the establishment of the 700 MHz public safety band.

The FCC announced the allocation of 24 MHz in the 700 MHz radio spectrum subsequent to the Public Safety Wireless Advisory Committee (PSWAC) report that established need requirements throughout the country. Interoperability within and among public safety and public service providers was identified in the PSWAC report as a basic minimum essential requirement.

Subsequent to the PSWAC the FCC established a Federal Advisory Committee called the National Coordination Committee (NCC). The NCC was created to address interoperability, technology, and implementation issues to be considered for the 700 MHz spectrum. The FCC required that a Regional Plan outlining the use of public safety radio frequencies be complete and approved of by the FCC before any agency within a region would receive channels from this new allocation. The Regional Plan conforms to the NCC planning guidelines. The Region 54 Plan committee's membership represents a cross-section of public safety and public service users. A Region Planning Committee membership list is contained in Appendix B.

1.2 Purpose

The purpose of the Regional Plan is to insure that maximum public benefit is derived from use of the 700 MHz spectrum by eligible agencies. Further, the plan was developed to guide eligible entities through the application process and provide an equitable means of settling disputes concerning frequency allocations should they arise.

1.3 Regional Plan Summary

First, Region 54 consists of 33 counties surrounding Lake Michigan in Illinois, Wisconsin, and Indiana. The broad classifications of entities eligible to apply for spectrum are defined in accord with NCC definitions. Next, to garner their participation in and support of the planning process, an attempt was made to contact all eligible agencies. These attempts are documented. The authority by which the Regional Planning Committee undertook these planning efforts is reviewed. A discussion follows of the process by which the initial spectrum allocation was made. Finally, a detailed discussion of the application process is given. This includes guidelines for spectrum use, application requirements, the application

review process and dispute resolution. Also included is a discussion of the future planning process.

The Region 54 Committee accepts the Computer Assisted Pre-Coordination Resource and Database (CAPRAD) initial allocation based on population density and call volume by county. It has been noted by the committee that this allocation closely matches the description of Designated Statistical Areas by the US Department of Management and Budget Bulletin. The Committee will use the CAPRAD database when allocating frequency resources in Region 54.

Interoperability guidelines and usage must be in accordance with the requirements of the State Interoperability Executive Committee (SIEC). In the event of any conflict between the interoperability rules for National Calling and Tactical channels in this plan and SIEC guidelines, the SIEC guidelines will prevail.

2.0 Regional Planning Committee Leadership

At the time of transmittal of this Plan modification submission to the FCC, the following individuals serve in leadership roles in Region 54 700MHz Regional Planning Committee (RPC): Chairman: Chris Kindelspire, Grundy County ETSB, Morris, IL 60450 Vice Chairman: Carl Guse, Ashippun Fire Dept. Secretary: Ned Jacklin, Morris Fire Protection and Ambulance District/A Beep LLC.

3.0 Regional Planning Committee Membership

Membership classes are defined in Article II of the Bylaws (Appendix A). In general, each eligible agency can have as many representatives as they want. Only one representative can vote, however. The Secretary shall maintain a list of members who are eligible to vote. No member is allowed to vote on his/her own agency's application.

3.1 Membership, Meetings and Voting procedures

The RPC shall have two classes of members: 'voting' and 'non-voting.' Voting members shall consist of one representative from any agency engaged in public safety activities eligible to hold a radio license under USC 47 CFR 90.20, 47 CFR 90.523, or 47 CFR 2.103. An agency shall be allowed more than one vote for each distinct eligibility category within the agency's political organization or jurisdiction. Voting members may not vote on issues involving their entity or agency's political organization or jurisdiction.

Non-voting members are all others seeking membership and interested in furthering the goals of public safety communications and whose entity is not eligible to hold a license under USC 47 CFR 90.20, 47 CFR 90.523, or 47 CFR 2.103.

Representatives, full- or part-time, of commercial communications related companies, manufacturers, consultants, engineering companies, radio service companies or other non-governmental, non-eligible public safety license holders will not be considered as voting members nor will be eligible to represent the Region as an official representative of the Region and will not be listed or provided any management authorization within any official websites or processing platform utilized for Region business. Commercial representatives may participate in Region public meetings and provide advisory information as request by the Region Chairperson and/or Executive Board by vote.

New members may be added by application. Application forms are available from the RPC Secretary. Membership shall be granted upon approval of application until resignation or removal.

Registration of an active member on CAPRAD is also required within 30 days of membership approval by the Region and the Chairperson.

In addition to any powers and rights as are vested in them by law or these bylaws, the members shall have such other powers and rights as membership may determine.

a. A member may be suspended or removed with cause by vote of a majority of members after reasonable notice and opportunity to be heard.

b. A member may resign by written notice to the Chairperson.

c. The annual meeting of the members shall be set by the Chairperson and shall be held in Region 54 in a central location that will provide the maximum opportunity for regional participation.

d. Regular meetings of the RPC may be called by the Chairperson or the Vice-Chairperson or upon written application of two or more members.

e. Reasonable notice of time and place of RPC meetings shall be given each member. Such notice need not specify the purpose of the meeting unless there is to be considered at the meeting (i) amendment to these by-laws or (ii) removal or suspension of an officer.

It shall be reasonable and sufficient to notify members of the time and place of RPC meetings at least thirty (30) days prior to a meeting. Meeting notifications will be accomplished according to NCC instructions and requirements. Members shall register on CAPRAD.org as to receive notices, access minutes as well as keeping current with Region 54 activities.

Members shall keep the Secretary informed of their most current address/telephone information (including e-mail) so they may be kept properly informed of committee activities.

Members

a. At any meeting of the RPC members, 20 percent of the voting members of record shall constitute a quorum.

b. Each voting member shall have one vote so long as a quorum is present. A simple majority of votes cast shall decide any issue except DISSOLUTION.

Regional Chairperson	Chris Kindelspire Grundy County Emergency Telephone System Board Director Electronic Operations 78 W Lowery Rd, Morris IL 60450 815-405-0998 ckindelspire@grundy911.org
Regional Vice-Chairperson	Carl Guse Ashippun Fire Dept. Carl Guse N743 Hickory Hills Dr Oconomowoc WI 53066 920-210-4455 crguse@gmail.com
Regional Secretary	Ned Jacklin Morris Fire Protection and Ambulance District A Beep LLC 112 Sherwood Pl Morris, IL 60450 779-279-2140 nedr54@sbcglobal.net
Regional Treasurer	Bill Carter Illinois Department of Public Health Radio Communications Coordinator 122 S Michigan Ave Chicago, IL 60603 312-497-6802 Billy.Carter@Illinois.gov

As outlined in the RPC bylaws, from time to time, as described in the RPC By-Laws (Appendix A), these positions will be subject to re-election. At any such time that one of these four positions changes, the Chair will be responsible for taking the following actions:

- Providing notice to the FCC of the changes
- Providing notice to the NRPC of the changes

Such changes will not be considered Plan modifications, and will not require that this document be reissued to the FCC for public notice and comment cycles.

4.0 Regional Profile

Region 54 contains thirty-three counties within the three states of Wisconsin, Illinois, and Indiana. It has a population of 12,745,368 (2000 Census) and a land area of 16,397 square miles. An alphabetical list of the individual counties can be found listed in Appendix C.

The States of Illinois, Indiana, and Wisconsin have diverse geography and a varied population base. Ground elevation varies from 180 meters AMSL in Chicago IL to 287 meters AMSL in Madison WI.

The population of the 12 Illinois Counties is 8.7 million people, 10 Indiana Counties is 1.3 million people, and 11 Wisconsin Counties is 2.67 million people. (January 2000). Over 68 percent of the population is concentrated in Illinois, 10 percent of the population is concentrated in Indiana, and 22 percent of the population is concentrated in Wisconsin. These areas are adjacent to Regions 13, 45, 14 and 21 and typically require Region 54 to obtain frequency coordination with multiple Regions when attempting frequency allotments in these densely populated areas.

Region 54 has 4 adjacent regions. They are as follows:

State of Illinois, Region 13.
State of Indiana, Region 14.
State of Michigan, Region 21.
State of Wisconsin, Region 45.

In previous NPSPAC 821 MHz frequency allotments, spectrum amounts disproportionate to population densities were allocated due to differing methodologies used in adjacent NPSPAC Regions and the timing of adjacent regions plan filing and approval. This resulted in a minimum number of channels available for Region 54, particularly in Cook and DuPage Counties in IL. In the 700 MHz band, county allotments for both narrowband channels have been developed based on population densities relative to adjacent Regions.

5.0 Notification Process

The notification process for the RPC meetings was primarily accomplished through e-mail. The original meeting included a notice published in FCC Public Notices and APCO website. Subsequent FCC Public Notices were published and e-mails were distributed to all attendees and re-distributed to e-mail lists of interested persons.

6.0 Regional Plan Administration

6.1 Operations of the Regional Plan Committee

This committee will use Robert's Rules of Order to conduct meetings. All decisions will be by clear consensus vote with each Public Safety Agency having one vote. The meetings are open to all persons and a public input time is given for anyone to express a viewpoint or to have input to the planning.

Workgroups may be formed as needed to work on specific issues. For the initial planning three workgroups were formed – writing group, spectrum planning group and operations group. Workgroups are intended to work on details of specific issues and make recommendations to the full committee. Any changes to the Regional plan must be voted and approved by the full Regional Plan Committee. Workgroups are open to any who want to participate. The Chair of the Regional Plan Committee appoints the Chair for each workgroup.

A minimum of one meeting per year will be held of the full committee. This will be announced and advertised 30 to 60 days in advance by the Committee Chair. Normal time for this meeting will be in the Spring of each year.

Beginning two years after Federal Communications Commission approval of this Regional Plan, the Chair shall call a meeting of the Committee to elect a Chair, Vice Chair and Secretary.

If the Chair is unable to serve the Vice Chair will serve as Chair until the next election meeting. If both the Chair and Vice Chair are unable to serve, one or the other should strive to call a special meeting of the Committee to elect replacements. If for some reason, neither the Chair nor the Vice Chair can call the special meeting, the State or any County within the region may call for a special meeting, giving at least 90 days notice to elect replacements.

6.2 Technical Subcommittee

The primary responsibility of the Region 54 Technical subcommittee will be to review applications from agencies within the region for conformance to plan requirements. The Technical subcommittee will have access to the Computer Assisted Pre-coordination and Resource Database System (CAPRAD) pre-coordination database system, and will review and recommend approval of applications, as they are received in the system. Applications approved by the RPC will be forwarded to the selected certified Public Safety coordinator, then to the FCC by the Public Safety Coordinator for licensure. The membership of this committee will consist of the Technical subcommittee chairperson, the Interoperability subcommittee chairperson and three other members of the RPC selected by the RPC chair. Membership of the Technical subcommittee will be determined at the annual meeting.

The Technical subcommittee duties are as follows:

- Review applications for compliance to the Region 54 Plan,
- Review appeals, applicant clarifications and applicant presentations,
- Recommend approval or denial to the RPC Chair,
- Maintain coordination with FCC certified frequency coordinators and advisors,
- Keep the CAPRAD database updated and current.

6.3 Interoperability Subcommittee

This section is optional. An example is provided below to assist in 700 MHz regional plan development:

Illinois, Indiana and Wisconsin have created a State Interoperability Executive Committee (SIEC) to oversee interoperability channels. The respective State's SIEC intends to include at least one member of the Region 54 RPC on its committee. The Region 54 interoperability subcommittee will serve as liaison with the respective State's SIEC and assist in the statewide interoperability planning process.

The Interoperability subcommittee duties are as follows:

- Work with the respective State's SIEC in the development of a statewide interoperability plan that includes each state's administration of the recognized 700 MHz interoperability channels
- Load interoperability channel assignments into CAPRAD,
- Review application interoperability plans for conformance to the state's administration of the 700 MHz interoperability channels.

6.4 Administrative Subcommittee

The Administrative subcommittee is responsible for monitoring adherence to the Region 54 Plan. The membership of this committee shall consist of the Interoperability subcommittee chairperson and three other members of the RPC selected by the RPC chairperson. Membership of the committee will be determined at the annual meeting. The committee will remain in place permanently to resolve inter-regional issues and recommend regional plan changes to the FCC.

The Administrative Subcommittee duties are as follows:

- Annually review and update the Region 54 Plan as necessary,
- Monitor various system(s) implementation progress,
- Communicate with applicants to determine if implementation of their systems is in accordance with provisions of their applications,

- Make recommendations to the RPC on applicants that fail to implement systems,
- Make recommendations to resolve inter-regional issues,
- Maintain coordination with neighboring RPC's.

6.5 Procedure for Requesting Spectrum Allotments

A. Upon FCC approval of this Plan, Region 54 will announce to the region that 700 MHz public safety channels are available in the Region and that channels have been assigned to pool allotments to counties within the Region. All available methods will be used to notify public safety entities of channel availability in the Region. All requests will be considered on a first come, first served basis. Region 54 supports the National Coordination Committee Pre-Assignment Rules and Recommendations, and will use these guidelines as a template to determine if an application submitted to the Regional Planning Committee meets Regional Planning standards. It is recommended that applicants familiarize themselves with these recommendations prior to submitting applications for Region 54 700 MHz public safety system implementation.

Other considerations taken into account for determination of priority of application will be:

- Users who are involved in the protection of life and property,
- Multi-agency shared systems in which multiple agencies agree to construct a common infrastructure (i.e. State, City, County, and others),
- Large agencies with multiple divisions constructing a common system for all to use (i.e. a large city or county with multiple divisions),
- Trunked use of the frequencies,
- Approved funding to construct the system using the 700 MHz frequencies,
- A statement of the future intentional actions of any currently licensed channels that will be replaced by a new 700 MHz system, and how it may benefit other agencies in the State by releasing these channels back into the Public Safety pool.

Agencies will need to fully document technical information, sites, tower heights, area of coverage, ERP of transmitter sites, along with any other technical information required for RPC subcommittee review and coordinator review. Agencies are expected to construct systems with maximum signal levels in their coverage area and minimum signal levels in co-channel user's coverage areas. Coverage area in the context of this plan will be defined as the geographical boundaries of agency(s) served by the system plus eight miles. The RPC realizes that radio signals don't stop at political borders. Our attempt is to maximize the use of the frequencies by packing as many users as possible per channel.

The FCC has not mandated the use of the CAPRAD database but many regions utilize it to initiate and receive 700 MHz license applications and to store associated documentation that accompanies each 700 MHz license application. The region will determine the manner in which it will receive 700 MHz license applications from applicants taking into consideration the limitations of the CAPRAD database. For example, the CAPRAD database currently has a limited ability to process a license modification of an existing FCC authorization. Due to this, applicants must submit these license applications to each region in the manner that best promotes timely regional review of these applications. These submissions could include paper copies, emailed copies or any other FCC application filing mechanisms. In acknowledging the limitations of the CAPRAD database, each 700 MHz regional planning committee must be flexible in the manner in which it receives applications and supports the applicant submissions in their region.

In general and unless otherwise noted and determined to be in the best interest of the region, the Region 54 Regional Planning Committee will adhere to the published National Coordination Committee Implementation Guidelines for 700 MHz Public Safety Regional Planning Committees, when applicable.

B. When applying for new 700 MHz channels, the Regional Planning Committee looks forward to 700 MHz applicants working with neighboring agencies to promote and continue the establishment of interoperability within their community and allow for the equitable distribution of existing spectrum allocations to promote efficient frequency use when applying for 700 MHz spectrum. Region 54 expects applicants to be cognizant of the fact that moving to the 700 MHz band may create a degree of isolation between themselves and neighboring agencies, and Region 54 looks forward to working with these applicants on a case-by-case basis on how to maintain spectrum availability in their area, while continuing to promote interoperable communications.

C. To request channels from Region 54, a full application package must be completed and submitted to the Regional Planning Committee by the applicant. 700 MHz regional planning committees need to work with applicants in the process of application submission with regard to CAPRAD as it is limited to the type of applications it can receive. Some applications that need to be submitted to regional planning committees cannot be submitted via the CAPRAD database due to the technical limitations inherent in the current database.

The application must include:

- An FCC Form 601,
- A short description of the proposed system,
- A justification for the additional spectrum. Channel Loading Factors – equipment inventory totals and the maximum number of mobile radios potentially in use at any given time. List mobile and portable units by agency inventory,
- An interference prediction map using the current version of TIA/EIA TSB 88 guidelines, Maps showing all interference predicted in the proposed system. Coverage Area – details

of an engineering survey showing the radio coverage required for minimum coverage of jurisdictional boundaries and how this survey meets the +40 dBu Service, 60 dBu adjacent channel protection and 5 dBu co channel interference protection contour requirements. A summary of engineering details providing a legend of the parameters to include the calculus applied to provide the engineering information being submitted to the Region which clearly identifies the radio coverage will not exceed the applicant's jurisdictional requirements or create interference to other systems, TV, or Canadian broadcasters. The applicant shall provide the formula used for the projected prediction which shall be Longley Rice, service and interference. The prediction study shall also include parameters used. Region 54 has adopted the National Regional Planning Committee process which supplies a uniform spectrum management formula and method throughout the nation. This provides a more uniform method of allocating spectrum throughout all of the Regions.

- Documents indicating agency-funding commitments sufficient to fund the development of the proposed system(s)
- An indication as to when they will migrate from their existing system to the new system. Vacated Frequencies Returned – frequencies the agency will release. List all participating agencies' public safety radio frequencies. Describe how they are utilized and provide a time line date they are to be returned to the public safety pool which will include a signed return agreement by the applicant,
- Inter-system interoperability – how agents of the applying organization will communicate with agents of different organizations. Explain how the system will communicate with other services in other bands. Explain how the system will interface with long distance radio communications, such as: amateur radio, satellite communications, and/or long-range emergency preparedness communications systems. Explain and certify that the applicant's agency will comply with the interoperability requirements of the SIEC plan. Any 800 MHz systems that are expanding to 700 MHz channels shall explain how they plan to meet the interoperability requirements of both plans.

Region 54 may request additional information at the time of review to assist in the evaluation process.

D. The Chair will distribute the request to all other agencies with allotments in the plan for review and approval electronically. Absent a protest, the Regional Planning Committee will approve the application and submit it through the CAPRAD

database, if possible, to the applicant's preferred FCC-certified frequency coordinator for processing. This process meets the requirements of Rule 90.176 (c).

If technically possible, the CAPRAD database will reflect the approved application and place the channels for the proposed system in "pre-license" status. 700 MHz Regional planning committees are encouraged to work with applicants and the limitations of the CAPRAD database to develop a process for 700 MHz application submission that is in the best interest of the applicant and allows the region to respond to the applicant in a timely, effective manner.

E. Allocation Dispute template: An agency may protest a proposed system within 30 calendar days of the original distribution. Protests will only be considered if the allocation does not conform to plan criteria or objecting agency or the Chairperson can show harmful interference is likely based on the information submitted by the agency requesting the new allocation. If an agency with pre-licensed/Region approved co-channel or adjacent channel allocations objects to a proposed allocation due to concerns about potential interference, the objecting agency may request field tests be done to confirm or refute interference potential.

The completion of these field tests will be required for Regional application approval. Any costs associated with field tests or any other requirement to obtain Region 54 plan approval is the responsibility of the agency submitting application to Region 54.

The parties involved must resolve the allocation dispute and notify the Region Chair within 14 calendar days. If the parties involved cannot resolve the allocation dispute within that timeframe, then a special full Committee meeting will be scheduled to consider and vote on the protest. If approved, the application will be submitted through the CAPRAD database to the applicant's chosen FCC-certified frequency coordinator for processing.

6.6 Procedure for Frequency Coordination

For details outlining recommended pre-coordination practices see Appendix M.

Before applicants submit an application to one of the FCC recognized frequency coordinators, the application must be reviewed at a frequency meeting of the Regional Planning Committee. The Committee will review the application to ensure it complies with all elements of the Regional Plan. This will NOT be a review to ensure the application form meets FCC requirements for filing.

The applicants must submit a copy of the FCC application and supporting documents to the Regional Plan Chair. An interference prediction map must be included in the documentation. TIA/EIA TSB88-A (or latest version) guidelines will be used to produce the interference map. The map must show all interference predicted using TSB88-A guidelines. Any agency with co-channel or adjacent channel allotments may request field tests of signal levels to verify interference

signal levels. Agencies must be prepared to conduct these field tests if a request is made.

6.7 Adjacent Region Spectrum Allocation and Coordination

Region 54 shares borders with adjacent Region 13, adjacent Region 14, adjacent Region 21, and adjacent Region 45. Region 54 will coordinate channel allocations with all its bordering regions by using the CAPRAD database. This tool will ensure adjacent state notification as well as FCC Certified Frequency Coordinator notification.

The Chair will send final draft copies of this plan to the conveners or Chair, as appropriate, to each adjacent region. Adjacent regions should be able to satisfy voice and narrowband data requests along their border areas with Region 54. If any region has problems satisfying requests in an adjacent area, Region 54 pledges to work with this region or any of the other surrounding regions to resolve any issues on a case by case basis.

6.8 Regional Plan Updates

This section is focused on instances when actions taken by the FCC or the 700 MHz Regional Planning Committee itself necessitate a change in the regional plan. 700 MHz Plan changes are required to be submitted to the FCC under Docket 02-378.

700 MHz PLAN MODIFICATION REQUIRED FOR ALL REGIONS
October 24, 2014 FCC Report and Order 14-172
Reserve Channel Reclassification-

The language below is from the FCC's Report and Order indicated above that outlines the changes 700 MHz RPC's need to make to their existing plans with the former Reserve channels being reallocated to General Use.

Discussion (FCC 14-172)
Paragraph 39. We conclude that the 700 MHz Reserve Channels should be added to the General Use pool and made available for multiple uses under RPC administration. The demand for 700 MHz narrowband spectrum has significantly increased in recent years, particularly in large urban areas. Some 700 MHz licensees have channel requirements that have surpassed what was envisioned in the original channel allotment process. Moreover, in Los Angeles, Washington DC, and other major metropolitan areas, the Reserve Channels offer much-needed capacity for relocating T-Band public safety licensees as required by the Public Safety Spectrum Act.

Paragraph 40. To accommodate these spectrum demands, we adopt the following overall approach. Rather than dedicating the Reserve Channels exclusively for use

with deployable systems, **we require the RPC's to administer the Reserve Channels subject to the following:**

In the non-T-Band areas, up to eight 12.5 kilohertz channels may be dedicated for temporary deployable trunked use and the rest for General Use, including low-power vehicular repeaters. In the T-Band markets, all twenty-four Reserve Channels will be available for General Use with priority given to relocating T-Band incumbents that commit to return an equal amount of T-Band channels.

The RPCs shall submit channel plans consistent with this Report and Order within six months from publication in the Federal Register. We encourage T-Band licensees transitioning to the former Reserve Channels to consider using spectrally efficient 6.25 kHz technology given the limited number (24) of available former Reserve Channels.

Regional Planning Committees, per the FCC language above, have a number of options to consider when repurposing the former Reserve Channels within their regions. Those regions that include T-Band areas must prioritize the assignment of all 24 Reserve Channels to those T-Band licensees. The FCC has recommended that up to eight (8) Former Reserve Channels be designated for nationwide deployable use and the National Public Safety Telecommunications Council (NPSTC) and the National Regional Planning Council (NRPC) have submitted to the FCC their recommendations for six (6) Former Reserve Channels that should be considered for nationwide deployable use, in bold in the Reserve Channel List below:

FCC Channel	CAPRAD Channel Label	Base Frequency	Mobile Frequency	Status
37-38	**General Use-D**	**769.231250**	**799.231250**	**Recommended for Nationwide Deployable Use**
61-62	**General Use-D**	**769.381250**	**799.381250**	**Recommended for Nationwide Deployable Use**
77-78	General Use	769.481250	799.481250	Recommended for Vehicular Repeater Use (MO3)
117-118	**General Use-D**	**769.731250**	**799.731250**	**Recommended for Nationwide Deployable Use**
141-142	**General Use-D**	**769.881250**	**799.881250**	**Recommended for Nationwide Deployable Use**
157-158	General Use	769.981250	799.981250	Recommended for Vehicular Repeater Use (MO3)
197-198	General Use	770.231250	800.231250	Available
221-222	General Use	770.381250	800.381250	Available
237-238	General Use	770.481250	800.481250	Available
277-278	General Use	770.731250	800.731250	Available
301-302	General Use	770.881250	800.881250	Available
317-318	General Use	770.981250	800.981250	Available

643-644	General Use	773.018750	803.018750	Available
683-684	General Use	773.268750	803.268750	Available
699-700	General Use	773.368750	803.368750	Available
723-724	General Use	773.518750	803.518750	Available
763-764	General Use	773.768750	803.768750	Available
779-780	General Use	773.868750	803.868750	Available
803-804	General Use	774.018750	804.018750	Available
843-844	General Use	774.268750	804.268750	Available
859-860	General Use	774.368750	804.368750	Recommended for Vehicular Repeater Use (MO3)
883-884	**General Use-D**	**774.518750**	**804.518750**	**Recommended for Nationwide Deployable Use (Alt CC)****
923-924	General Use	774.768750	804.768750	Recommended for Vehicular Repeater Use (MO3)
939-940	**General Use-D**	**774.868750**	**804.868750**	**Recommended for Nationwide Deployable Use (Pri CC)****

** Channels 883-884 and 939-940 are designated as Alternate and Primary Control Channels for the Nationwide 700 MHz Deployable Trunked Systems.

It should be noted that the former Reserve channels identified in this modification have limitations as to their availability within the Mexican and Canadian border regions subject to treaties between the United States, Mexico and Canada. Impacted regional planning committees should identify which of these new General Use channels are available for coordination within these international border areas and make decisions as to which channels should be utilized in which areas to effectively utilize these additional General Use assignments.

Subsequently, it is recommended that each 700 MHz regional planning committee modify their existing plan to allow for the use of channels 37-38, 61-62, 117-118, 141-142, 883-884, and 939-940, other than in regions that include FCC designated T-Band areas where all 24 12.5 kHz former Reserve channels are prioritized for existing T-Band licensees. While regions are not required to dedicate the above listed 6 channels for nationwide deployable 700 MHz trunked systems, it is strongly recommended that the region solicit interest in their region with regard to the proposed use of these channels and which agencies, if any, would be interested in providing or accessing deployable equipment to support the use of these 6 channels.

As indicated in the list above, Non-Deployable Former Reserve Channel Assignments available in each region are: 77-78, 157-158, 197-198, 221-222, 237-238, 277-278, 301-302, 317-318, 643-644, 683-684, 699-700, 723-724, 763-764, 779-780, 803-804, 843-844, 859-860, 923-924. Some of the former Reserve channels can be utilized in regions for vehicular repeater operations (MO3) and the list above identifies channels that can be utilized for 800 MHz MO3 operations with sufficient duplexer spacing and other channels could be utilized for MO3 operations with non-

800 MHz systems. Other than in the regions that include T-Band areas, regional planning committees can utilize the implementation of the former Reserve to General Use channels in any manner they deem appropriate. Below are a number of recommendations that regions can utilize in their plan modifications. Regions are encouraged to engage their members in conversations and discussions regarding the best utilization of these channels in their 700 MHz plan.

Region 54 700 MHz Regional Planning Committee submits this 700 MHz plan modification to the Commission in accordance with the Report and Order (14-172) and the requirements assigned to each regional planning committee therein.

Region 54 will prioritize the assignment of all 24 Reserve Channels to those T-Band licensees within Region 54 for a five year priority access period for T-Band incumbents. This prioritization will expire five years from the date of this Public Notice, i.e., January 9, 2020, unless modified by the Commission.

Region 54 will modify its existing 700 MHz plan utilizing the following channel plan for the former Reserve Channels. Region 54 supports the FCC's philosophy to encourage T-Band licensees transitioning to the former Reserve Channels to use spectrally efficient 6.25 kHz technology given the limited number (24) of available former Reserve Channels.

Region 54 will employ the same methodology for coordination of these frequencies as with the existing spectrum allotment. Region 54 will utilize the same intra-region and inter-region coordination practices with this spectrum allotment as well.

As per FCC PS Docket Nos. 13-87 and WT Docket 02-378, a five year priority access period for T-Band incumbents will expire five years from the date of this Public Notice, i.e., January 9, 2020, unless modified by the Commission, at which time Region 54 will utilize any of the unlicensed 24 Reserve Channels in the following manner:

We add channels
37-38, 61-62, 117-118, 141-142, 883-884, and 939-940
To be utilized as Nationwide Deployable Trunked Channels consistent with the NPSTC/NRPC recommendation to the FCC utilizing the recommended system and unit identifiers from NPSTC/NRPC.

We add channels
77-78 and 157-158
to be utilized as 2 watt vehicular repeater frequencies (MO3), to be coordinated for and specifically for use with 800 MHz systems in the region due to the needed separation between these frequencies and those utilized by public safety in the 800 MHz band.

We add channels
859-860 and 923-924

As 2 watt non-800 MHz vehicular repeater frequencies (MO3) to be coordinated for use with other systems in the region.

We modify the Region 54 700 MHz plan to utilize the remaining channels as "floating allotments" to supplement the existing General Use allotments in each region: 197-198, 221-222, 237-238, 277-278, 301-302, 317-318, 643-644, 683-684, 699-700, 723-724, 763-764, 779-780, 803-804, 843-844. Allowing these remaining channels to supplement the existing General Use allotments utilized within the region will promote maximum flexibility of the use of these channels in each region.

Lastly, Region 54 700 MHz Regional Planning Committee encourages the Commission to permit the introduction of new 700 MHz General Use channels in a flexible manner where the channels are available to all existing allotments where the channel use can be the most optimal. 700 MHz Regional plan modifications need to reiterate the Intra-Region and Inter-Region coordination protocol in use currently in the region and how these new flexible allotments will be subject to the same coordination protocol within the region. Finally, Region 54 will utilize the same intra-region and inter-region coordination practices with these new, flexible General use allotments as required in their current plan.

6.9 Air to Ground Channels

In its Report and Order (FCC 14-172) dated October 24, 2014 the FCC re-designated the 700 MHz Secondary Trunked channels and reserved them for specific Air to Ground communications between low-altitude aircraft and associated ground stations. The secondary channels are the most suitable channels for this specific Air to Ground purpose as they have no incumbents and little risk of co-channel interference since there are no current Secondary Trunked licensees.

The eight (8) 12.5 kHz Air to Ground channels are listed below:

FCC Channel	Base Frequency	Mobile Frequency	Status
21-22	769.131250	799.131250	Available
101-102	769.631250	799.631250	Available
181-182	770.131250	800.131250	Available
261-262	770.631250	800.631250	Available
659-660	773.118750	803.118750	Available
739-740	773.618750	803.618750	Available
819-820	774.118750	804.118750	Available
899-900	774.618750	804.618750	Available

The FCC also adopted a two (2) watt ERP limit for the use of these channels along with restricting airborne use of these channels to altitudes below 1500 feet Above Ground Level (AGL) to limit the area impacted by the airborne operations. Given the proximity of these Secondary Trunking Channels to the designated Interoperability channels in the 700 MHz band (immediately adjacent to), the FCC

assigned the responsibility for coordinating these channels to each state while permitting aircraft use on both the upper and lower portion of each Secondary Trunked Channel pair.

As indicated above, each state has been tasked with coordinating the Air to Ground Channels. If a state wants to shed that responsibility and have its respective 700 MHz regional planning committee(s) assume the responsibility of coordinating these Air to Ground channels because they are better prepared to process 700 MHZ license applications, or the state is just not in a position to coordinate such channels, each state must request, in writing to the FCC, that this responsibility be re-assigned to the respective regional planning committee(s) in their state.

March 20, 2015

David G. Simpson Rear Admiral (ret.), U.S. Navy
Chief, Public Safety & Homeland Security Bureau Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Admiral Simpson,

On behalf of the State of Illinois Statewide Interoperability Executive Committee (ILSIEC), I am requesting that the administration and coordination of the new 700 MHz Air to Ground 700 MHz Narrowband channels, re-designated by the Commission from the previous Secondary Trunked 700 MHz narrowband Channels, be administered by the Regions 13 & 54 700 MHz Regional Planning Committees. A list of the eight re-designated channels for Air to Ground channels is below.

The ILSIEC has a history of administering and developing technical parameters and usage guidelines for interoperability channels as designated by the Commission in the 700 MHz band as well as interoperability channels designated by the Commission in the VHF and UHF public safety spectrum band. The administration of interoperability channels, many of which are licensed by rule (subscribers) and require the issuance of guidance to the user base, is a coordination task much different than what will be required for the new 700 MHz Air to Ground channels. Air to Ground usage has an expectation from its user base to be more internal, agency specific communications as opposed to how interoperability channels are used. Subsequently, we feel the Regions 13 & 54 700 MHz Regional Planning Committees are better served to coordinate these channels, as necessary, within Regions 13 & 54.

We have communicated with the Region 13 & 54 700 MHz Regional Planning Committees and advised them of our intent to request the administration and coordination of these Air to Ground channels be tasked to the Regional Planning Committees and to ensure consistent coordination of the 700 MHZ band in the region. They concur with this request.

FCC Channel Number	Base Frequency Center	
21-22	769.13125 MHz	799.13125 MHz
101-102	769.63125 MHz	799.63125 MHz
181-182	770.13125 MHz	800.13125 MHz
261-262	770.63125 MHz	800.63125 MHz
659-660	773.11875 MHz	803.11875 MHz
739-740	773.61875 MHz	803.61875 MHz
819-820	774.11875 MHz	804.11875 MHz
899-900	774.61875 MHz	804.61875 MHz

Should any questions arise from this request, please do not hesitate to contact me.

Regards,

Captain Felix Canizares, Illinois State Police
Chairman, ILSIEC

7.0 System Design/Efficiency Requirements

7.1 Interference Protection

The frequency allotment list will be based on an assumption that systems will be engineered on an interference-limited basis, not a noise floor-limited basis. Agencies are expected to design their systems for maximum signal levels within their coverage area and minimum levels in the coverage area of other co-channel users. Coverage area is normally the geographical boundaries of the Agency(s) served plus a three to five mile area beyond.

Systems should be designed for minimum signal strength of 40 dBμ in the system coverage area while minimizing signal power out of the coverage area. TIA/EIA TSB88-A (or latest version) will be used to determine harmful interference assuming 40 dBμ, or greater, signal in all systems coverage areas. This may require patterned antennas and extra sites compared to a design that assumes noise limited coverage.

7.2 Spectrum Efficiency Standards

Initial allotments may be made on the basis of 25 kHz, 12.5 KHz or 6.25 KHz channels. To maximize spectrum utilization, prudent engineering practices and receivers of the highest quality must be used in all systems. Given a choice of radios to choose from in a given technology family, agencies should use the units with the best specifications. This plan will not protect agencies from interference if their systems are under-constructed (e.g., areas with the established service area having minimum signal strength below 40 dBu), or the systems utilize low quality receivers. The applicant's implementation of prudent engineering practices will be encouraged by the Regional Planning Committee at all times.

In some regions, it is the eventual goal of the FCC and the public safety community for radio equipment to meet the requirement of one voice channel per 6.25 kHz of spectrum. When applying for channels within Region 54, the applicants should know that regions have discretion on enforcing channel bandwidth and voice efficiency requirements for their region. As 6.25 kHz migration and technology evolves, instances where an agency creates any "orphaned" 6.25 kHz channels should realize that these channels would be allocated to nearby agencies requesting channels to maintain consistent grouping and utilization of 25 kHz blocks within the region.

Region 54 encourages small agencies to partner with other agencies in multi-agency or regional systems as they promote spectrum efficiency and both small and large agency capacity needs can be met. Loading criteria can also be achieved in multi-agency systems that will allow greater throughput for all agencies involved than that which could be achieved individually.

7.3 Orphaned Channels

The narrowband pool allotments with Region 54 will have a channel bandwidth of 25 kHz. These 25 kHz allotments have been characterized as "Technology Neutral" and flexible enough to accommodate multiple technologies utilizing multiple bandwidths. If agencies choose a technology that requires less than 25 kHz channel bandwidth for their system, there is the potential for residual, "orphaned channels" of 6.25 kHz or 12.5 kHz bandwidth immediately adjacent to the assigned channel within a given county area.

An orphan channel may be used at another location within the county area where it was originally approved, if it meets co- and adjacent channel interference criteria. Region 54 will utilize **"county areas"** as guidelines for channel implementation with the area of Region54. The definition of **"county area"** in this plan is the geographical/political boundaries of a given county, plus a distance of up to 10 miles outside of the county.

If the channel, or a portion of a channel, is being moved into a "county area" that is within 30 miles of an adjacent region, Region 54 will receive concurrence from the affected region. By extending the "county area" by a designated distance, it is anticipated this will increase the possibility that orphaned channel remainders will still be able to be utilized within the "county area", and reduce the potential for channel remainders to be forced to lay dormant and used with a county channel allotment. These movements will be documented on the National Public Safety Telecommunications Council CAPRAD database.

If the "orphaned channel" remainder does not meet co-channel and adjacent channel interference criteria by moving it within the "county area" as listed above, and it is determined by the region that the "orphaned channel" cannot be utilized in the region without exceeding the distance described in the "county area" listed above, Region 54 will submit a plan amendment to the FCC to repack the channel to a location where its potential use will maintain maximum spectral efficiency. This FCC plan amendment will require affected region concurrence.

When in the best interest of public safety communications and efficient spectrum use within the Region, the Region 54 Regional Planning Committee shall have the authority to move orphan channel allotments, and/or co-/adjacent-channel allotments affected by the movement of orphan channels, within its "county areas", which are defined above. This is to retain spectrum efficiency and/or minimize co-channel or adjacent channel interference between existing allotments within the region utilizing disparate bandwidths and technologies.

8.0 Allocation of Narrowband "General Use" Spectrum

8.1 Introduction

The Region 54 Technical Subcommittee recommends that allotments be made on the basis of one 25 kHz channel for every two (2) voice channel requests and one 12.5 kHz channel for each narrowband data channel request. This recommendation is approved by the full Committee and is part of this plan. Allotments will be made in 25 kHz groups to allow for various digital technologies to be implemented. All agencies requesting spectrum during the initial filing window (see Section 6.5) will be allocated channels if plan requirements are met. Agencies using Frequency Division Multiple Access (FDMA) will be expected to maintain 12.5 kHz equivalency when developing systems and will be required to utilize BOTH 12.5 kHz portions of the 25 kHz block. In most cases, this will require the geographic separation of each 12.5 kHz adjacent channel. In order to promote spectrum efficiency, Region 54 will ensure that systems allocated 25 kHz channel blocks will utilize all of the channel and not "orphan" any portions of a system designated channel (See Section 7.3).

8.2 Low Power Secondary Operations

To facilitate portable operation by any licensee, and to provide channels for such operation without impacting the use of primary channels, certain low power secondary use will be permitted. Any public safety entity otherwise licensed to use one or more channels under this Plan may receive authorization to license any additional channel for secondary use, subject to the following criteria:

- All operation of units on such authorized channels will be considered secondary to other licensees on both co-channel and adjacent channels,
- No channels on, or adjacent to, those designated in the Plan for wide area operation and/or mutual aid use will be authorized,
- Channels will be authorized for use in specific areas only, such areas to be within the licensee's authorized operational area,
- Maximum power will be limited to 6 watts ERP,
- Use aboard aircraft is prohibited,
- Applications for channels may be submitted to the Committee for consideration at any time and must be accompanied by a showing of need. The Committee may select and authorize licensing of these secondary use channels after consideration of potential interference to co-channel and adjacent channel allotments, allocations and licensees. Authorization may be granted for use of any suitable channel, without prior allotment or allocation to the requesting agency,

- In the event the channels authorized for low power secondary operation are needed by others during any window opening for reassignment, no protection will be afforded to the licensed secondary user, and they may be required to change frequencies or surrender licenses to prevent interference to primary use channels.

8.3 Low Power Channels

The FCC, in the 700 MHz band plan, set aside channels 1 - 8 paired with 961 – 968 and 949 – 958 paired with 1909 – 1918 for low power use for on-scene incident response purposes using mobiles and portables subject to Commission-approved regional planning committee regional plans. Transmitter power must not exceed 2 watts (ERP).

Channels 9 –12 paired with 969 – 972 and 959 – 960 paired with 1919 – 1920 are licensed nationwide for itinerant operation. Transmitter power must not exceed 2 watts (ERP).

These channels may operate using analog operation. To facilitate analog modulation this plan will allow aggregation of two channels for 12.5 kHz bandwidth. On scene temporary base and mobile relay stations are allowed (to the extent FCC rules allow) with an antenna height limit of 6.1 meter (20 feet) above the ground. However, users are encouraged to operate in simplex mode whenever possible. This plan does not limit use to only analog operations. These channels are intended for use in a wide variety of applications that may require digital modulation types.

In its dialog leading up to 47 CFR §90.531 allocating the twenty-four low power 6.25 kHz frequency pairs (of which eighteen fall under RPC jurisdiction), the Federal Communications Commission (FCC) suggested that there is a potential for multiple low power applications, and absent a compelling showing, a sharing approach be employed rather than making exclusive assignments for each specific application because low power operations can co-exist [in relatively close proximity] on the same frequencies with minimal potential for interference due to the 2 watt power restriction.

The interoperability channel sets and nomenclature identified in the following table is provided for reference only. Region 54 intends to comply with APCO/NPSTC ANS**1.104.1-2010**: Standard Channel Nomenclature for the Public Safety Interoperability Channels which may call for a modification to this section. The designated 700 MHz interoperability channels will be administered by the Illinois Statewide Interoperability Executive Committee (SIEC) utilizing FCC rules that govern this portion of the spectrum. The FCC's final ruling on interoperability channel(s) and the Illinois SIEC interpretation of those rules takes precedence over any Region 54 recommendation included in this plan for this portion of the spectrum.

Low Power Itinerant				
RX Frequency	**TX Frequency**	**AOP**	**Proposed Use**	**Channel Name**
769.00625	799.00625	Regional	Law	LPxxL-1
769.00625	769.00625	Regional	Law	LPxxL-1D
769.01875	799.01875	Regional	General	LPxxG-1
769.01875	769.01875	Regional	General	LPxxG-1D
769.03125	799.03125	Regional	Fire / EMS	LPxxF-1
769.03125	769.03125	Regional	Fire / EMS	LPxxF-1D
769.04375	799.04375	Regional	Law	LPxxL-2
769.04375	769.04375	Regional	Law	LPxxL-2D
769.05625	799.05625	Nationwide	General	LPNAT-1
769.05625	769.05625	Nationwide	General	LPNAT-1D
769.06875	799.06875	Nationwide	General	LPNAT-2
769.06875	769.06875	Nationwide	General	LPNAT-2D
774.93125	804.93125	Regional	General	LPxxG-2
774.93125	774.93125	Regional	General	LPxxG-2D
774.94375	804.94375	Regional	Fire / EMS	LPxxF-2
774.94375	774.94375	Regional	Fire / EMS	LPxxF-2D
774.95625	804.95625	Regional	Law	LPxxL-3
774.95625	774.95625	Regional	Law	LPxxL-3D
774.96875	804.96875	Regional	General	LPxxG-3
774.96875	774.96875	Regional	General	LPxxG-3D
774.98125	804.98125	Regional	Fire / EMS	LPxxF-3
774.98125	774.98125	Regional	Fire / EMS	LPxxF-3D
774.99375	804.99375	Nationwide	General	LPNAT-3
774.99375	774.99375	Nationwide	General	LPNAT-3D
Name format:	LP*xx* U-#d			
LP	indicates Low Power channel			
xx	Geographic usage.			
U				
#				
d				

Simplex operations may occur on either the base or mobile channels. Users are cautioned to coordinate on scene use among all agencies involved. Users should license multiple channels and be prepared to operate on alternate channels at any given operational area.

8.4 System Implementation

Region 54 will not be affected by interference potential from existing television stations operating in the 700 MHz spectrum. A notification, in writing, has already been issued to secondary television station operators / licensees of the intended use of 700 MHz spectrum in Region 54 (APPENDIX I). This allows for an applicant to have an immediate review of their application package and, when approved, meet intended construction timeframes identified within the application submittal.

After allocation of channels (Section 6.5) the agency must release a System RFP and sign a contract with a vendor within one year of the channel allocation. If an agency does not implement in the timeframes specified, that agency's allotment may be removed from the allotment list. An Agency may file a request with the Region Chair for an extension of time to implement. The request should include all details describing why the agency has not implemented along with a new implementation schedule. The Committee Chair will advertise this request and set a date for the full committee to vote on the request. If no request for extension is received or the Committee votes not to extend implementation, the Committee Chair will advertise this action and set a filing window to give other agencies a chance to request an allotment of that spectrum.

Should system implementation not begin within two (2) years or if projected planned channel loading is not attained within four (4) years after granting of license, the channels will be returned for re-allotment to others. A one (1) year extension may be supported by the RPC, if it can be shown that circumstances are beyond the control of the applicant. The applicant will be responsible for contacting the FCC to request an extension. Applicants must be acting to the extent of their power to implement the project within their authority.

System implementation will be monitored by the Administration Subcommittee which will be responsible for determining the progress being made on the implementation of a system. Monitoring of systems implementation by the subcommittee will take place on one (1) year intervals. If progress is made and the system is ultimately implemented the system can be determined "complete". If progress is not made, the licensee will be advised in writing that they are in default of their plan and the Region 54 plan and the consequences of their lack of progress. The Implementation subcommittee will inform the RPC and PW frequency coordinator of the situation. The RPC Technical subcommittee will continue to monitor the progress of any system determined in default and if progress is still not being made the subcommittee will inform the RPC and recommend informing the FCC of the lack of progress. The licensee in default can appeal this action or can allow the license to be withdrawn. If the authorized frequencies are withdrawn they will be returned to the frequency allotment pool for future use.

8.5 Priority for Receiving Spectrum Allocations

Priority for channel allocations will be made on a first come first served basis. Cooperative multi-agency system implementations will be given priority over non-shared single agency systems.

When applying for the new 700 MHz channels, the RPC expects applicants to relinquish any amount of any currently used spectrum and make that spectrum available for use by other agencies in Region 54 upon beneficial use of an implemented 700 MHz radio system. This currently licensed spectrum may be in any public safety band.

> Agencies with a primary voice communication system operating under a NPSPAC band 800 MHz license, which are requesting 700 MHz channels for system expansion, are not asked to relinquish this spectrum but will be asked to include this spectrum that is already licensed into the loading requirements for a radio system as defined in this plan. The reason for this requested inclusion is that most, if not all, radio equipment developed for the 700 MHz band is expected to be also capable of operation on any existing 800 MHz NPSPAC licensed systems already in use and is likely to be included in justification of the loading of NPSPAC channels. Without this inclusion, it would theoretically be possible for an agency to double its frequency spectrum allocations by applying for an equivalent number of 700 MHz channels, for each 800 MHz channel that it has already licensed and justified loading criteria for, and reuse the same mobile or portable users for both bands, to both planning committees, in Region 54. Although separated in FCC rules and regulations, Region 54 will work with NPSPAC planning committees to attempt to make the most efficient use of spectrum for Public Safety in Region 54.

Agencies SHALL relinquish frequencies that will no longer be used as soon as possible in accordance with FCC rules and regulations.

The number of channels an applicant should retain would be an amount required to provide minimum interoperable communications to surrounding jurisdictions. In order to promote the interests of agencies that will benefit from an applicant submitting a request for 700 MHz spectrum, it is requested that the applicant submit a list of all channels and licenses held on existing public safety channels, and those channels that will be expected to be unlicensed when full beneficial use of 700 MHz channels are realized. The RPC will only distribute this information, and not decide whether it is sufficient. It must be stressed that the Region 54 Regional Planning Committee supports and promotes multi-agency systems that allow for regional/wide area coverage within the region.

8.6 Channel Loading

The RPC recognizes the FCC's increased focus on spectral efficiency standards versus absolute loading of each 700 MHz frequency assignment. It is, however, the goal of the RPC to encourage efficient utilization of each frequency channel irrespective of bandwidth and the NRPC therefore provides the following channel loading recommendations:

- Each applicant for a 700 MHZ trunked system should design their system for a minimum of 70/100/120 or any other number of mobile and portable radios, solely at regional discretion, for each 12.5 kHz voice channel that will be placed in service.

- Single conventional channels should be designed for a minimum load of 70 radios per 12.5 kHz channel. Mobile, portable, data, and control stations will all be considered within this count.

Channel loading will eventually be required to migrate to a voice efficiency of 70 units per 6.25 kHz channel and if the FCC at some point requires that voice efficiencies meet 6.25 kHz per voice path. Regional discretion on channel loading and bandwidth is directly proportional to channel availability and need.

8.7 Wideband Data

At this time, wideband data can only be considered if a FCC waiver is obtained.

8.8 Dispute Resolution – Intra-Regional

In the event an agency disputes the implementation of this Plan or the Federal Communications Committee approval of this Plan or parts of this Plan, the agency must notify the Chair of the dispute in writing. This section does not apply to protests over new spectrum allocations (see Section 6.5). The Chair will attempt to resolve the dispute on an informal basis. If a party to the dispute employs the Chair, then the Vice Chair will attempt resolution. In such cases, the Chair shall be deemed to have a conflict of interest and will be precluded from voting on such matters. If after 30 days the dispute is not resolved, the Chair (or Vice Chair) will appoint a Dispute Resolution Committee consisting of two members from governmental agencies within States occupying Region 54 and at least five members from different counties in Region 54. That committee will select a Chair to head the committee and a secretary to document the proceedings.

The Regional Plan Chair (or Vice Chair) will represent the Region in presentations to the Dispute Resolution Committee. The Committee will hear input from the disputing agency, any affected agencies, and the Region Chair. The Committee will then meet in executive session to prepare a recommendation to resolve the dispute. Should this recommendation not be acceptable to the disputing agency/agencies, the

dispute and all written documentation from the dispute will be forwarded to the National Regional Planning Council. As a last resort, the dispute will be forwarded to the Federal Communications Commission for final resolution.

9.0 Interoperability Channels

9.1 Introduction

The ability for agencies to effectively respond to mutual aid requests directly depends on their ability to communicate with each other. Region 54 is subject to many natural disasters and mutual aid is common among agencies. This Plan seeks to facilitate the communications necessary for effective mutual aid.

The States of Illinois, Indiana and Wisconsin will administer the 700 MHz interoperability channels via the State Interoperability Executive Committee (SIEC) under National Coordination Committee's (NCC) guidelines. The Region 54 700 MHz Regional Planning Committee will work with the Illinois, Indiana and Wisconsin's State Interoperability Executive Committee and 1 member from the respective states member of the Region 54 700 MHz Regional Planning Committee will participate in the respective State Interoperability Executive Committee (SIEC) and they will represent Region 54. If at any time the State SIEC is unable to function in the role of administering the interoperability channels in the 700 MHz band, the State SIEC will notify the Commission of its inability to administer the 700 MHz Interoperability channels. This regional planning committee will administer these interoperability channels in the interim until further direction as to these responsibilities being assigned to the 700 MHz regional planning committee is provided by the Commission. Should the FCC approve of the transfer of these administration duties to the respective 700 MHz regional planning committee, then this committee will assume this role and notify the FCC in writing of its acceptance in the change of administrative duties.

9.2 Tactical Channels

Region 54 will not set aside additional channels for interoperability use within the region. It is anticipated the sixty-four FCC designated interoperability channels (6.25 KHz) will be sufficient to provide interoperability (voice and data) within Region 54.

All mobile and portable units operating under this Plan and utilizing 700 MHz channels must be programmed with the minimum number of channels called for either in NCC guidelines or as the respective State's interoperability Executive Committee specifies. The channel display in these radios will be in accordance with the NCC guidelines that have common alphanumeric nomenclature to avoid any misinterpretation of use within Region 54. The Illinois, Indiana and Wisconsin SIEC is the final authority on the interpretation of the distribution of the 700 MHz interoperability channels.

9.3 Deployable Systems

This Plan strongly supports use of deployable systems, both conventional and trunked. Deployable systems are prepackaged systems that can deploy by ground or air to an incident to provide additional coverage and capacity on interoperability channels. This will minimize the expense of installing extensive fixed infrastructure and recognizes the difficulty of providing complete coverage of the region due to environmental constraints.

Agencies should have conventional deployable systems capable of being tuned to any of the interoperability tactical channels. Those agencies that are part of a multiagency trunked system and commonly provide mutual aid to each other are encouraged to have trunked deployable systems that operate on the tactical channels designated by the FCC for this use. The SIEC will develop the operational details for deploying these systems.

It is expected that the tactical channels set aside for trunked operation will be heavily used by deployable systems. Therefore, the tactical channels cannot be assigned to augment general use trunked systems.

9.4 Monitoring of Calling Channels

700 MHz licensees will be responsible for monitoring interoperable calling channels. The SIEC will develop operational guidelines for this function. Appendix "K" will include NCC documents that display required Interoperability guidelines.

10.0 Applicant Requirements and Evaluation

10.1 Introduction

The applicant evaluation criteria established in the NCC process, and as further defined in this plan, will be followed for approval. All requests will be considered on a first come, first served basis. In cases, where specific frequency allotments are required by numerous applicants at the same time, the applicant evaluation matrix point system will be utilized to determine the successful applicant. In all cases, area of coverage, technical requirements, and channel loading criteria will be applied. Exceptions may apply upon unique circumstances, after review and approval by the RPC. Deviations from FCC rules are not to be approved unless a fully justified waiver request has been presented to the RPC. The Region 54 "Technical" subcommittee will evaluate and process applications within thirty (30) days after notified of receipt by CAPRAD.

The matrix has been prepared to enable consistent evaluation of plans and applications. Variations within the parameters of this plan and submitted applications and/or plans may require extensive evaluation. Therefore, it shall be responsibility of the RPC to evaluate each situation on its own merit.

Each applicant for a trunked system shall certify that a minimum of 70 field radios for each 12.5 kHz channel will be placed in service within five (5) years of the initial plan approval date. If that is not the case, then less than fully loaded channels shall be returned to the allotment pool and the licensee shall modify their license accordingly. Conventional channels shall be loaded to 70 mobile units per channel. Where an applicant does not load a channel to 70 radio/subscriber units, the channel will be available for assignment to other licensees. Mobile, portable and control stations will be considered as mobile units.

10.2 Application Requirements

Each application must contain the following:

- FCC ULS 601 Form(s),
- Items required in Section 6.5 (c).
- Explanation of the systems future growth for all agencies involved in the system, including how the system will be loaded and what equipment type and quantity is planned to be purchased to load the system,
- Explanation of the budget commitment for the proposed system,
- State of compliance that the applicant's agency will conform with interoperability requirements of the SIEC plan,
- Any documentation that identifies intended radio channels the agency/entity will be abandoning through the FCC licensing processes, after full beneficial system use of allocated 700 MHz channels, for informational purposes only, and the benefit of other Entities with Region 54.
- Documentation that will assist the evaluation of the application against the Point Matrix system identified in Section "10.3".

The application will be forwarded to the Applicant's designated coordinator for technical review and any appropriate information will be uploaded to CAPRAD. Upon approval by the coordinator the Applicant may submit to the FCC for licensure. Any conflicts encountered during the licensing process, after Regional approval, the application will be returned to the RPC for resolution with the applicant.

10.3 Evaluation Matrix Point System

Region 54 will use a point system to determine approval priority of competing applications within the region. The maximum total points that can be achieved are 800 points. The applications receiving the highest point total will receive approval for the channels. Seven categories will be evaluated.

Where applicable, such as in multiple disciplines shared systems, the points for all agencies utilizing the system are included in the total.

1. Service and Use (Maximum score 300 points)

Service	Points
Local	10
County	10
State	10
Federal	10

Use	Points
Criminal Justice/Law Enforcement/Crisis Mgmt	50
Fire/EMS	50
Special Emergency	40
Emergency Management	40
Forestry Conservation	30
Highway Maintenance	30
General Government	20

Maximum Total 300

Environmental protection will fall in the "Special Emergency" category and shall be considered for tasks that directly reduce contamination to the air, water or ground by chemicals or waste materials.

2. Interoperability Communications (Maximum score 100 points)

The application is scored on the degree of interoperability that is demonstrated, with a range of points from 0 to 100. This category will not rate the application on the inclusion of interoperability channels, but on its proposed actual ability to communicate with different levels of government and services during a time of emergency.

Each applicant is encouraged to have direct mobile-to-mobile communications among these radio type functions; local, state and federal in the criminal justice, fire/EMS, special emergency, emergency management, forestry, highway maintenance and general government. All applicants will start with 100 points and points will be deducted based upon their lack of intersystem communications. No points will be deducted if a plan or system has not yet been developed within their areas of service.

- Ten (10) points will be deducted for each radio service type function in which the applicant lacks intersystem communication, if direct mobile-to-mobile does not exist.

- Five (5) points for each radio service that the applicant lacks direct mobile-to-mobile communications.

3. Loading (Maximum score 150 points)

Those applicants who have demonstrated that they are part of or developing cooperative, multi-agency, systems will be scored on a range from 0 to 150 points depending upon the extent of the cooperative system.

Multi-agency trunked, fully loaded, system	101 – 150 points
Trunked system, fully loaded, single agency	76 – 100 points
Mobile data channel fully loaded/channel	76 – 100 points
Conventional system fully loaded/channel	0 – 75 points

Expansion of existing systems will be evaluated as to the aforementioned category they are in. Any system less than fully loaded will have its score multiplied by the proportion:

Fully loaded/channel is a 12.5 kHz channel with 70 radio units. Control channels shall be considered as data channels. Plans submitted to the RPC shall stipulate the number of voice communication channels and the number of data channel(s). These points will only be assigned to fully loaded systems that are planned and identified with the application package submittal.

4. Spectrum Efficiency (Maximum score 50 points)

The applicant will be scored on the degree of spectrum efficient technology that the system demonstrates. A trunked system will be considered a spectrum efficient technology as well as any technological systems feature that is designed to enhance the efficiency of the system and improve the efficient use of spectrum.

Spectrum efficiency points

Trunked or equally high efficient technology	50 points
Conventional system using data	50 points
Technologies that increases system throughput	50 points

5. System Implementation Factors (Maximum score 100 points)

This category scores the applicant on two factors, budgetary commitment and plan completeness. The degree of budgetary commitment is scored on a range from 0 to 50 points based on the RPC's evaluation of commitment demonstrated through documentation by the applicant and its funding source entity. A high degree of funding commitment will receive a higher score. Applicants will also be scored on the degree of plan completeness on a range from 0 to 50 points. Applicants must submit a timetable for the implementation of the system. Applicants should be aware of the requirements outlined in "Slow Growth Plan" portion of this plan and the FCC rules.

Multi phase project with funds committed to all phases 50 points
Multi phase project plan completed for all phases 50 points

Applicants with less than complete funding commitment and/or incomplete plans will have their point score reduced accordingly. Resolutions, legislation, or other such documentation from governing entities shall be submitted with applications to support financial commitment.

6. System Density (Maximum score 100 points)

Each applicant's System will be scored on the level of geographic efficiency for requisite communications coverage, for the applicant's jurisdictional area served or regional area served under agreement with other Agencies and/or defined communication requirements. Scoring will be based upon the defined radio coverage area of the application, and the Entity's jurisdictional area or required communication support areas. Region 54 recognizes that each Entity may not be required (by System or network users) to provide radio System communication support for all jurisdictional boundaries or areas that are supported by that Entity. This evaluation is to only weigh the efficiency of the System being applied for, against the required areas for communication support based on System user requirements or other Entity Systems licensed or applied for. Scores are based on the ratio multiplied by 100 with the maximum not to exceed 100 points.

Percentage of System operational area for applicant's jurisdictional area of responsibility for communications support x 100 = _____

10.4 Application Processing

All applications will be processed in the most expeditious manner possible by the RPC. After Region 54 approval, the applications will be sent to the coordinator requested by the applicant. All documentation required by the designated coordinator selected in this process will be available through the CAPRAD system. Subsequent to coordination approval the FCC will grant the license(s) to the applicant.

11.0 Process for Handling Unformed Regions

The Region 54 Technical Subcommittee recommends that all Regions use the following pre-planning methodology to facilitate coordination with adjacent Regions. This procedure will provide a spectrum allotment for adjacent Regions that do not immediately form a Committee.

Counties or other geographic subdivisions within 70 miles of the Regional border need to share spectrum with the adjacent Region(s). The sharing indicated is inherent in the CAPRAD Packing Program, as it views all counties nationwide as

separate entities while ignoring state borders. With all criteria being equal, this ensures all counties are provided sufficient spectrum in accordance with their surrounding counties. The appropriate ratio of channels shall be allotted to counties in adjacent regions based upon each county's population. A 25 kHz building block will be used to distribute spectrum between the regions. A description of the demographics of the affected border areas shall be included.

The requirements for adjacent region concurrence will require a waiver if the adjacent region has not yet formed. The Region filing the Plan must use the pre-planning procedure outlined above. The waiver request must be filed concurrently with the Plan and contained in the cover letter.

12.0 Future Planning

12.1 Database Maintenance

The CAPRAD pre-coordination database has developed channel allotments in each county area within Region 54 using criteria such as current population, 2010 Census data, height above average terrain (HAAT) and public safety use curves generated by the Public Safety Wireless Advisory Committee (PSWAC) to provide spectrally efficient frequency allotments. Region 54 will continue to use the CAPRAD pre-coordination database for other 700 MHz spectrum as it becomes available.

12.2 Inter-Regional Dispute Resolution Process

In the event that a dispute arises between Region 54 and an adjacent Region or Regions, regarding spectrum allocations or implementation, which cannot be resolved within 60 days, the parties to the dispute will request a hearing by the National Regional Planning Oversight Committee.

All 4 adjacent Regions have signed the Region 54 dispute resolution. See Appendix "J" for details and Inter-Regional Dispute Resolution Agreements signed by the adjacent Regions.

13.0 Certification

I hereby certify that all planning committee meetings, including subcommittee or executive committee meetings were open to the public. A summary of the deliberations of the Committee pursuant to adopting this Plan can be found in Appendix "F", Meeting attendance, agendas and other events.

Chris Kindelspire
December 4, 2015
Chairman, Region 54

Appendix A-By-laws

THE BYLAWS OF REGION 54
October 16, 2015

ARTICLE I

NAME & PURPOSE

1.1 Name and purpose. The name of this Region shall be Region 54. Its primary purpose is to foster cooperation, planning, development of regional plans and the implementation of these plans in the 700 MHz Public Safety Band.

ARTICLE II

MEMBERS

For purposes of this Article, the term "member," unless otherwise specified, refers to both voting and non-voting members.

2.1 Number, Election and Qualification. The Regional Committee shall have two classes of members, "voting members" and "non-voting members." New members may be added at annual, special, or regular meetings.

Voting Members. Voting members shall consist of one representative from any single agency engaged in public safety eligible to hold a license under 47 CFR 90.20, 47 CFR 90.523 or 47 CFR 2.103. Except that a single agency shall be allowed no more than one vote for each distinct eligibility category (e.g. police, fire, EMS, highway) within the agency's organization or political jurisdiction. In voting on any issue the individual must identify himself/herself and the agency and eligibility category which he or she represents. Voting members may not vote on issues involving their entity.

Non-Voting Members. Non-voting members are all others interested in furthering the goals of public safety communications.

2.2 Tenure. In general, each member shall hold MEMBERSHIP from the date of acceptance until resignation or removal.

2.3 Powers and Rights. In addition to such powers and rights as are vested in them by law, or these bylaws, the members shall have such other powers and rights as the membership may determine.

2.4 Suspension and Removal. A representative may be suspended or removed with cause by vote of a majority of members after reasonable notice and opportunity to be heard. Failure to attend 50% of meetings held in a calendar year shall be a specific cause for removal from the membership.

2.5 Resignation. A member may resign by delivering written resignation to the chairman, vice-chairman, treasurer or secretary of the Regional Committee or to a meeting of the members.

2.6 Semi-annual Meetings. The semi-annual meeting of the members shall be held at the Grundy County Emergency Operation Center 1320 Union Street, Morris IL 60450 in the Spring and Fall of each calendar year. If at least one annual meeting is not held as herein provided, a special meeting of the members may be held in place thereof with the same force and effect as the annual meeting, and in such case all references in these bylaws, except in this Section 2.6, to the annual meeting of the members shall be deemed to refer to such special meeting. Any such special meeting shall be called and notice shall be given as provided in Section 2.7 and 2.8.

2.7 Special Meetings. Special meetings of the members may be held at any time and at any place within the Regional Committee area. Special meetings of the members may be called by the chairman or by the vice-chairman, or in case of death, absence, incapacity, by any other officer or, upon written application of two or more members.

2.8 Call and Notice.

A. Annual meetings. Reasonable notice of the time and place of special meetings of the members shall be given to each member. Such notice need not specify the purposes of a meeting, unless otherwise required by law or these bylaws or unless there is to be considered at the meeting (i) amendments to these bylaws, (ii) an increase or decrease in the number of members, or (iii) removal or suspension of a member who is an officer.

B. Reasonable and sufficient notice. Except as otherwise expressly provided, it shall be reasonable and sufficient notice to a member to send notice by mail at least five days or by e-mail/facsimile at least three days before the meeting, addressed to such member at this or her usual or last known business address, or, to give notice to such member in person or by telephone at least three days before the meeting. (State notification requirements may differ.)

2.9 Quorum. At any meeting of the members, a majority of the officers and {either a minimum number of members or a minimum percentage of members} of the voting members shall constitute a quorum. Any meeting may be adjourned to such date or dates not more than ninety days after the first session of the meeting by a majority of the votes cast upon the question, whether or not a quorum is present, and the meeting may be held as adjourned without further notice.

2.10 Action by Vote. Each voting member, representing a particular agency (one vote per agency) shall have one vote; non-voting members have no right to vote. When a quorum is present at any meeting, a majority of the votes properly cast

by voting members present shall decide any question, including election to any office, unless otherwise provided by law or these bylaws.

2.11 Action by Writing. Any action required or permitted to be taken at any meeting of the members may be taken without a meeting if all members entitled to vote on the matter consent to the action in writing and the written consents are filed with the records of the meetings of the members. Such consents shall be treated for all purposes as a vote at a meeting.

2.12 Proxies. Voting members may vote either in person or by written proxy dated not more than one month before the meeting named therein, which proxies shall be filed before being noted with the secretary or other person responsible for recording the proceedings of the meeting. Unless otherwise specifically limited by their terms, such proxies shall entitle the holders thereof to vote at any adjournment of the meeting by the proxy shall terminate after the final adjournment of such meeting.

2.13 Voting on One's Own Application. At no time can a voting member vote on his/her application as well as vote on applications that is spectrum assigned to in the county like area a voting-member resides.

2.14 Special Interest Voting. A voting member SHALL NOT have a commercial interest in any of his/her region and/or adjacent regions application(s) on which he/she is reviewing, approving and/or voting.

ARTICLE III

OFFICERS AND AGENTS

3.1 Number and qualification. The officers of the Regional Committee shall be a chairman, vice-chairman, treasurer, secretary and such other officers, if any, as the voting members may determine. All officers must be voting members of the Regional Committee.

3.2 Election. The officers shall be elected by the voting members at their first meeting.

3.3 Tenure. In general, each member shall hold membership from the date of acceptance until resignation or removal.

3.4 Chairman and Vice Chairman. The chairman shall be the chief executive officer of the Regional Committee and, subject to the control of the voting members, shall have general charge and supervision of the affairs of the Regional Committee. The chairman shall preside at all meetings of the Regional Committee.

The Vice Chairman, if any, shall have such duties and powers as the voting members shall determine. The vice-chairman shall have and may exercise all the

powers and duties of the chairman during the absence of the chairman or in the event of his or her inability to act.

3.5 Treasurer. The treasurer shall be the chief financial officer and the chief accounting officer of the Regional Committee. The treasurer shall be in charge of its financial affairs, funds, and valuable papers and shall keep full and accurate records thereof.

3.6 Secretary. The secretary shall record and maintain records of all proceedings of the members in a file or series of files kept for that purpose, which file or files shall be kept within the Region and shall be open at all reasonable times to the inspection of any member. Such file or files shall also contain records of all meetings and the original, or attested copies, of bylaws and names of all members and the address (including e-mail address, if available) of each. If the secretary is absent from any meeting of members, a temporary secretary chosen at the meeting shall exercise the duties of the secretary at the meeting.

3.7 Suspension or Removal. An officer may be suspended with cause by vote of a majority of the voting members.

3.8 Resignation. An officer may resign by delivering his or her written resignation to the chairman, vice-chairman, treasurer, or secretary of the Regional Committee. Such resignation shall be effective upon receipt (unless specified to be effective at some other time), and acceptance thereof shall not be necessary to make it effective unless it so states.

3.9 Vacancies. If the office of any officer becomes vacant, the Chairman shall appoint a successor. Each such successor shall hold office for the remainder of the term, after which a new officer shall be elected by the membership.

ARTICLE IV

AMENDMENTS

These bylaws may be altered, amended or repealed in whole or in part by vote. The voting members may by a two-thirds vote, alter, amend, or repeal any bylaws adopted by the Regional Committee members or otherwise adopt, alter, amend or repeal any provision which FCC regulation or these bylaws requires action by the voting members.

ARTICLE V

DISSOLUTION

This Regional Committee may be dissolved by the consent of two-thirds plus one of the members in good standing at a special meeting called for such purpose. The FCC shall be notified.

ARTICLE VI

RULES OF PROCEDURES

The Conduct of Regional Meetings including without limitation, debate and voting, shall be governed by Robert's Rules of Order, newly revised 1990 edition, ninth edition, Sarah Corbin Robert, Henry M. Robert III, and William J. Evans.

Appendix B-700 MHz Regional Planning Committee Membership List

Meeting attendance lists are found in CAPRAD; www.caprad.org under the 700MHz planning tab for Region 54.

Appendix C-List of Counties/Cities in the 700 MHz Region

REGION 54 COUNTY DEMOGRAPHICS

State	Name	Population (2000 Census)	Land Area (mi^2)	Population Density (1/ mi^2)	Normalized Capacity Load
IL	Boone County	41,786	281	148.564	0.819%
IL	Cook County	5,376,741	946	5685.580	49.595%
IL	De Kalb County	88,969	634	140.295	1.767%
IL	Du Page County	904,161	334	2710.270	9.224%
IL	Grundy County	37,535	420	89.390	0.829%
IL	Kane County	404,119	520	776.501	5.635%
IL	Kankakee County	103,833	677	153.429	2.020%
IL	Kendall County	54,544	321	170.142	1.037%
IL	Lake County	644,356	448	1439.697	7.834%
IL	McHenry County	260,077	604	430.942	4.058%
IL	Will County	502,266	837	600.121	7.348%
IL	Winnebago County	278,418	514	541.947	4.154%
IL TOTAL		**8,696,805**	**6536**		
IN	Elkhart County	182,791	464	394.104	2.904%
IN	Jasper County	30,043	560	53.661	0.752%
IN	La Porte County	110,106	598	184.051	2.056%
IN	Lake County	484,564	497	975.008	6.487%
IN	Marshall County	45,128	444	101.577	0.966%
IN	Newton County	14,566	402	36.247	0.404%
IN	Porter County	146,798	418	351.099	2.388%
IN	Pulaski County	13,755	434	31.717	0.395%
IN	St. Joseph County	265,559	457	580.659	3.910%
IN	Starke County	23,556	309	76.156	0.541%
WI	Dane County	426,526	1202	354.878	6.922%
WI	Dodge County	85,897	882	97.358	1.858%
WI	Jefferson County	74,021	557	132.889	1.488%
WI	Kenosha County	149,577	273	548.250	2.226%
WI	Milwaukee County	940,164	242	3892.061	9.053%
WI	Ozaukee County	82,317	232	354.898	1.336%
WI	Racine County	188,831	333	566.895	2.793%
WI	Rock County	152,307	720	211.400	2.759%
WI	Walworth County	93,759	555	168.840	1.785%
WI	Washington County	117,493	431	272.722	2.014%
WI	Waukesha County	360,767	556	649.357	5.200%
WI TOTAL		**2,671,659**	**5983**		
TOTALS IL, IN, WI		**12,685,330**	**17102**		

Appendix D-Sample Cover Letter to Adjacent Regional Chairs to obtain 700 MHz plan approval

Chair Region_____
Address

Dear_____

Attached is the final 700 MHz Regional Plan for Region 54. Please review and respond within 60 days of receipt. For your convenience, I have attached a sample Adjacent Region Concurrence letter that you can use to formally acknowledge your Regions approval of Region 54's Plan. If you have any questions, do not hesitate to contact me.

I have also attached an Inter-Regional Dispute Resolution Agreement that must be signed by you and must accompany my Regional Plan when filed with the FCC. As we have discussed, this agreement simply formalizes the process we will use to ensure concurrence to any frequency allocations in our region borders and the steps we will take to resolve any disagreements.

Thank you for your time and attention to this matter.

Sincerely;

(Chairperson Name)
Chair, Region 54

Appendix E-Adjacent Region Concurrence Notice

Appendix F-Regional Planning Committee Meeting Minutes

Minutes from Region 54's meeting can be found on CAPRAD; www.caprad.org under the 700MHz planning tab for Region 54.

Appendix G-Interoperability Channel MOU Template

On State Interoperability Executive Committee Letterhead

TO: (signer of application and title)
(agency name)

FROM: (name), State Interoperability Executive Committee Chairperson

DATE: (mm/dd/yyyy)

SUBJECT: Memorandum of Understanding for Operating on the 700 MHz Interoperability Channels

This memorandum of understanding (hereafter referred to as MOU) shall be attached to the application when submitting it. By virtue of signing and submitting the application and this MOU, (agency name) (hereafter referred to as APPLICANT) affirms its willingness to comply with the proper operation of the Interoperability (interoperability) channels as dictated by the State Interoperability Executive Committee (here after referred to as SIEC) as approved by the Federal Communications Commission (hereafter referred to as FCC) and by the conditions of this MOU.

The APPLICANT shall abide by the conditions of this MOU which are as follows:

- To operate by all applicable State, County, and City laws/ordinances.
- To utilize "plain language" for all transmissions.
- To monitor the Calling Channel(s) and coordinate the use of the Tactical Channels.
- To identify inappropriate use and mitigate the same from occurring in the future.
- To limit secondary Trunked operation to the interoperability channels specifically approved on the application and limited to channels listed below.
- To relinquish secondary Trunked operation of approved interoperability channels to requests for primary conventional access with same or higher priority.
- To mitigate contention for channels by exercising the Priority Levels identified in this MOU.

The preceding conditions are the primary, though not complete, requirements for operating in the interoperability channels. Refer to the Region Plan for the complete requirements list.

Priority Levels:

1. Disaster or extreme emergency operation for mutual aid and interagency communications;
2. Emergency or urgent operation involving imminent danger to life or property;
3. Special event control, generally of a preplanned nature (including Task Force operations)
4. Single agency secondary communications (default priority).

To resolve contention within the same priority, the channel should go to the organization with the wider span of control/authority. This shall be determined by the State Interoperability Executive Committee or RPC for the operation or by the levels of authority/government identified in the contention.

For clarification purposes and an aid to operate as authorized, any fixed base or mobile relay stations identified on the license for temporary locations (FCC station class FBT or FB2T, respectively) shall remain within the licensed area of operation. Similarly, vehicular/mobile repeater stations (FCC station class MO3) shall remain within the licensed area of operation. Federal agencies are permitted access to interoperability channels only as authorized by 47 CFR 2.102 (c) & 2.103 and Part 7.12 of the NTIA Manual.

Any violation of this MOU, the Region Plan, or FCC Rule shall be addressed immediately. The first level of resolution shall be between the parties involved, next the State Interoperability Executive Committee or RPC, and finally the FCC.

_____ (typed or printed name of authorized signer)
_____ (authorized signer identified above and consistent with application)
_____ (date)
_____ (agency name)
_____ (agency address)
_____ (agency address)
_____ (agency address)
_____ (signer's phone)
_____ (signer's email address, if available)

Appendix H-Region (your region #) Channel Allotments

STATE	Area Name	Channel	Class	Catagory	General	Base Freq	Mobile Freq
National		001-002	Voice	National	LP	769.00625	799.00625
National		003-004	Voice	National	LP	769.01875	799.01875
National		005-006	Voice	National	LP	769.03125	799.03125
National		007-008	Voice	National	LP	769.04375	799.04375
National		009-010	Voice	National	LP	769.05625	799.05625
National		011-012	Voice	National	LP	769.06875	799.06875
Illinois	Will	013-016	Voice	General	Use	769.0875	799.0875
Wisconsin	Racine	013-016	Voice	General	Use	769.0875	799.0875
Illinois	Lake, IL	017-020	Voice	General	Use	769.1125	799.1125
Indiana	Porter	017-020	Voice	General	Use	769.1125	799.1125
Wisconsin	Dane	017-020	Voice	General	Use	769.1125	799.1125
National		021-022	Voice	National	Air to Ground	769.13125	799.13125
Illinois	Du Page	025-028	Voice	State	License	769.1625	799.1625
Wisconsin	Waukesha	025-028	Voice	State	License	769.1625	799.1625
Indiana	Lake, IN	029-032	Voice	State	License	769.1875	799.1875
Wisconsin	Rock	029-032	Voice	State	License	769.1875	799.1875
Illinois	Kane	033-036	Voice	State	License	769.2125	799.2125
Indiana	La Porte	033-036	Voice	State	License	769.2125	799.2125
Wisconsin	Milwaukee	033-036	Voice	State	License	769.2125	799.2125
National		037-038	Voice	National	Reserved	769.23125	799.23125
National		039-040	Voice	National	Call-In	769.24375	799.24375
Illinois	Cook	041-044	Voice	General	Use	769.2625	799.2625
Indiana	St. Joseph	041-044	Voice	General	Use	769.2625	799.2625
Wisconsin	Jefferson	041-044	Voice	General	Use	769.2625	799.2625
Illinois	Kendall	045-048	Voice	General	Use	769.2875	799.2875
Illinois	Winnebago	045-048	Voice	General	Use	769.2875	799.2875
Wisconsin	Milwaukee	045-048	Voice	General	Use	769.2875	799.2875
Illinois	McHenry	049-052	Voice	General	Use	769.3125	799.3125
Indiana	Elkhart	049-052	Voice	General	Use	769.3125	799.3125
Indiana	Lake, IN	049-052	Voice	General	Use	769.3125	799.3125
Illinois	Du Page	053-056	Voice	General	Use	769.3375	799.3375
Wisconsin	Waukesha	053-056	Voice	General	Use	769.3375	799.3375
Illinois	Lake, IL	057-060	Voice	General	Use	769.3625	799.3625

Indiana	Jasper	057-060	Voice	General	Use	769.3625	799.3625
Wisconsin	Dane	057-060	Voice	General	Use	769.3625	799.3625
National		061-062	Voice	National	Reserved	769.38125	799.38125
National		063-064	Voice	National	Interop	769.39375	799.39375
Illinois	Cook	065-068	Voice	State	License	769.4125	799.4125
Wisconsin	Washington	065-068	Voice	State	License	769.4125	799.4125
Indiana	Newton	069-072	Voice	State	License	769.4375	799.4375
Wisconsin	Walworth	069-072	Voice	State	License	769.4375	799.4375
Illinois	Du Page	073-076	Voice	State	License	769.4625	799.4625
Illinois	Winnebago	073-076	Voice	State	License	769.4625	799.4625
Indiana	Starke	073-076	Voice	State	License	769.4625	799.4625
Wisconsin	Milwaukee	073-076	Voice	State	License	769.4625	799.4625
National		077-078	Voice	National	Reserved	769.48125	799.48125
National		079-080	Voice	National	Interop	769.49375	799.49375
Illinois	Cook	081-084	Voice	General	Use	769.5125	799.5125
Indiana	St. Joseph	081-084	Voice	General	Use	769.5125	799.5125
Wisconsin	Jefferson	081-084	Voice	General	Use	769.5125	799.5125
Illinois	Kendall	085-088	Voice	General	Use	769.5375	799.5375
Illinois	Winnebago	085-088	Voice	General	Use	769.5375	799.5375
Wisconsin	Milwaukee	085-088	Voice	General	Use	769.5375	799.5375
Illinois	McHenry	089-092	Voice	General	Use	769.5625	799.5625
Indiana	Elkhart	089-092	Voice	General	Use	769.5625	799.5625
Indiana	Porter	089-092	Voice	General	Use	769.5625	799.5625
Illinois	Will	093-096	Voice	General	Use	769.5875	799.5875
Wisconsin	Waukesha	093-096	Voice	General	Use	769.5875	799.5875
Illinois	Lake, IL	097-100	Voice	General	Use	769.6125	799.6125
Indiana	La Porte	097-100	Voice	General	Use	769.6125	799.6125
Wisconsin	Dane	097-100	Voice	General	Use	769.6125	799.6125
National		101-102	Voice	National	Air to Ground	769.63125	799.63125
National		103-104	Voice	National	Interop	769.64375	799.64375
Illinois	Cook	105-108	Voice	State	License	769.6625	799.6625
Indiana	St. Joseph	105-108	Voice	State	License	769.6625	799.6625
Wisconsin	Waukesha	105-108	Voice	State	License	769.6625	799.6625
Indiana	Newton	109-112	Voice	State	License	769.6875	799.6875
Wisconsin	Kenosha	109-112	Voice	State	License	769.6875	799.6875
Illinois	Kane	113-116	Voice	State	License	769.7125	799.7125
Indiana	La Porte	113-116	Voice	State	License	769.7125	799.7125
Wisconsin	Dane	113-116	Voice	State	License	769.7125	799.7125
National		117-118	Voice	National	Reserved	769.73125	799.73125

National		119-120	Voice	National	Interop	769.74375	799.74375
Illinois	Du Page	121-124	Voice	General	Use	769.7625	799.7625
Indiana	St. Joseph	121-124	Voice	General	Use	769.7625	799.7625
Wisconsin	Dodge	121-124	Voice	General	Use	769.7625	799.7625
Illinois	Kankakee	125-128	Voice	General	Use	769.7875	799.7875
Illinois	Winnebago	125-128	Voice	General	Use	769.7875	799.7875
Wisconsin	Milwaukee	125-128	Voice	General	Use	769.7875	799.7875
Illinois	Cook	129-132	Voice	General	Use	769.8125	799.8125
Indiana	Porter	133-136	Voice	General	Use	769.8375	799.8375
Wisconsin	Dane	133-136	Voice	General	Use	769.8375	799.8375
Wisconsin	Waukesha	133-136	Voice	General	Use	769.8375	799.8375
Illinois	Grundy	137-140	Voice	General	Use	769.8625	799.8625
Illinois	Lake, IL	137-140	Voice	General	Use	769.8625	799.8625
Wisconsin	Dane	137-140	Voice	General	Use	769.8625	799.8625
National		141-142	Voice	National	Reserved	769.88125	799.88125
National		143-144	Voice	National	Interop	769.89375	799.89375
Illinois	Grundy	145-148	Voice	State	License	769.9125	799.9125
Illinois	McHenry	145-148	Voice	State	License	769.9125	799.9125
Indiana	Lake, IN	145-148	Voice	State	License	769.9125	799.9125
Wisconsin	Dodge	145-148	Voice	State	License	769.9125	799.9125
Illinois	Winnebago	149-152	Voice	State	License	769.9375	799.9375
Wisconsin	Milwaukee	149-152	Voice	State	License	769.9375	799.9375
Illinois	Cook	153-156	Voice	State	License	769.9625	799.9625
Wisconsin	Jefferson	153-156	Voice	State	License	769.9625	799.9625
National		157-158	Voice	National	Reserved	769.98125	799.98125
National		159-160	Voice	National	Interop	769.99375	799.99375
Illinois	Kane	161-164	Voice	General	Use	770.0125	800.0125
Indiana	St. Joseph	161-164	Voice	General	Use	770.0125	800.0125
Wisconsin	Dodge	161-164	Voice	General	Use	770.0125	800.0125
Indiana	Lake, IN	165-168	Voice	General	Use	770.0375	800.0375
Wisconsin	Rock	165-168	Voice	General	Use	770.0375	800.0375
Illinois	Du Page	169-172	Voice	General	Use	770.0625	800.0625
Indiana	La Porte	169-172	Voice	General	Use	770.0625	800.0625
Wisconsin	Milwaukee	169-172	Voice	General	Use	770.0625	800.0625
Illinois	McHenry	173-176	Voice	General	Use	770.0875	800.0875
Indiana	Elkhart	173-176	Voice	General	Use	770.0875	800.0875
Indiana	Newton	173-176	Voice	General	Use	770.0875	800.0875
Illinois	Will	177-180	Voice	General	Use	770.1125	800.1125
Wisconsin	Ozaukee	177-180	Voice	General	Use	770.1125	800.1125

National		181-182	Voice	National	Air to Ground	770.13125	800.13125
National		183-184	Voice	National	Interop	770.14375	800.14375
Illinois	Will	185-188	Voice	State	License	770.1625	800.1625
Wisconsin	Waukesha	185-188	Voice	State	License	770.1625	800.1625
Illinois	McHenry	189-192	Voice	State	License	770.1875	800.1875
Indiana	Jasper	189-192	Voice	State	License	770.1875	800.1875
Illinois	Du Page	193-196	Voice	State	License	770.2125	800.2125
Illinois	Winnebago	193-196	Voice	State	License	770.2125	800.2125
Indiana	Elkhart	193-196	Voice	State	License	770.2125	800.2125
Wisconsin	Dodge	193-196	Voice	State	License	770.2125	800.2125
National		197-198	Voice	National	Reserved	770.23125	800.23125
National		199-200	Voice	National	Interop	770.24375	800.24375
Illinois	Cook	201-204	Voice	General	Use	770.2625	800.2625
Wisconsin	Washington	201-204	Voice	General	Use	770.2625	800.2625
Illinois	Kankakee	205-208	Voice	General	Use	770.2875	800.2875
Indiana	St. Joseph	205-208	Voice	General	Use	770.2875	800.2875
Wisconsin	Walworth	205-208	Voice	General	Use	770.2875	800.2875
Wisconsin	Dane	209-212	Voice	General	Use	770.3125	800.3125
Wisconsin	Dane	209-212	Voice	General	Use	770.3125	800.3125
Wisconsin	Milwaukee	209-212	Voice	General	Use	770.3125	800.3125
Indiana	Lake, IN	213-216	Voice	General	Use	770.3375	800.3375
Wisconsin	Kenosha	213-216	Voice	General	Use	770.3375	800.3375
Illinois	Kane	217-220	Voice	General	Use	770.3625	800.3625
Indiana	La Porte	217-220	Voice	General	Use	770.3625	800.3625
Wisconsin	Waukesha	217-220	Voice	General	Use	770.3625	800.3625
National		221-222	Voice	National	Reserved	770.38125	800.38125
National		223-224	Voice	National	Interop	770.39375	800.39375
Illinois	Kankakee	225-228	Voice	State	License	770.4125	800.4125
Illinois	Lake, IL	225-228	Voice	State	License	770.4125	800.4125
Illinois	Kendall	229-232	Voice	State	License	770.4375	800.4375
Wisconsin	Racine	229-232	Voice	State	License	770.4375	800.4375
National		23-24	Voice	National	Interop	769.14375	799.14375
Illinois	Cook	233-236	Voice	State	License	770.4625	800.4625
Indiana	Pulaski	233-236	Voice	State	License	770.4625	800.4625
Wisconsin	Jefferson	233-236	Voice	State	License	770.4625	800.4625
National		237-238	Voice	National	Reserved	770.48125	800.48125
National		239-240	Voice	National	Interop	770.49375	800.49375
Illinois	Du Page	241-244	Voice	General	Use	770.5125	800.5125
Indiana	Jasper	241-244	Voice	General	Use	770.5125	800.5125

Wisconsin	Racine	241-244	Voice	General	Use	770.5125	800.5125
Illinois	Kankakee	245-248	Voice	General	Use	770.5375	800.5375
Illinois	Winnebago	245-248	Voice	General	Use	770.5375	800.5375
Indiana	Elkhart	245-248	Voice	General	Use	770.5375	800.5375
Illinois	Cook	249-252	Voice	General	Use	770.5625	800.5625
Wisconsin	Dodge	249-252	Voice	General	Use	770.5625	800.5625
Illinois	Grundy	253-256	Voice	General	Use	770.5875	800.5875
Indiana	St. Joseph	253-256	Voice	General	Use	770.5875	800.5875
Wisconsin	Rock	253-256	Voice	General	Use	770.5875	800.5875
Illinois	Kane	257-260	Voice	General	Use	770.6125	800.6125
Indiana	Lake, IN	257-260	Voice	General	Use	770.6125	800.6125
Wisconsin	Waukesha	257-260	Voice	General	Use	770.6125	800.6125
National		261-262	Voice	National	Air to Ground	770.63125	800.63125
National		263-264	Voice	National	Interop	770.64375	800.64375
Illinois	Grundy	265-268	Voice	State	License	770.6625	800.6625
Illinois	Lake, IL	265-268	Voice	State	License	770.6625	800.6625
Illinois	Winnebago	265-268	Voice	State	License	770.6625	800.6625
Indiana	St. Joseph	265-268	Voice	State	License	770.6625	800.6625
Indiana	Porter	269-272	Voice	State	License	770.6875	800.6875
Wisconsin	Racine	269-272	Voice	State	License	770.6875	800.6875
Illinois	Cook	273-276	Voice	State	License	770.7125	800.7125
Indiana	Elkhart	273-276	Voice	State	License	770.7125	800.7125
National		277-278	Voice	National	Reserved	770.73125	800.73125
National		279-280	DATA	National	Low Speed	770.74375	800.74375
Illinois	Will	281-284	Voice	General	Use	770.7625	800.7625
Wisconsin	Dane	281-284	Voice	General	Use	770.7625	800.7625
Wisconsin	Milwaukee	281-284	Voice	General	Use	770.7625	800.7625
Illinois	McHenry	285-288	Voice	General	Use	770.7875	800.7875
Indiana	Elkhart	285-288	Voice	General	Use	770.7875	800.7875
Illinois	Du Page	289-292	Voice	General	Use	770.8125	800.8125
Illinois	Lake, IL	293-296	Voice	General	Use	770.8375	800.8375
Indiana	La Porte	293-296	Voice	General	Use	770.8375	800.8375
Wisconsin	Washington	293-296	Voice	General	Use	770.8375	800.8375
Indiana	Lake, IN	297-300	Voice	General	Use	770.8625	800.8625
Wisconsin	Racine	297-300	Voice	General	Use	770.8625	800.8625
National		301-302	Voice	National	Reserved	770.88125	800.88125
National		303-304	Voice	National	Interop	770.89375	800.89375
Illinois	Will	305-308	Voice	State	License	770.9125	800.9125

Wisconsin	Ozaukee	305-308	Voice	State	License	770.9125	800.9125
Wisconsin	Rock	305-308	Voice	State	License	770.9125	800.9125
Indiana	La Porte	309-312	Voice	State	License	770.9375	800.9375
Wisconsin	Dane	309-312	Voice	State	License	770.9375	800.9375
Illinois	Cook	313-316	Voice	State	License	770.9625	800.9625
Indiana	Elkhart	313-316	Voice	State	License	770.9625	800.9625
Wisconsin	Dane	313-316	Voice	State	License	770.9625	800.9625
Wisconsin	Milwaukee	313-316	Voice	State	License	770.9625	800.9625
National		317-318	Voice	National	Reserved	770.98125	800.98125
National		319-320	Voice	National	Interop	770.99375	800.99375
Illinois	Cook	321-324	Voice	General	Use	771.0125	801.0125
Indiana	Marshall	321-324	Voice	General	Use	771.0125	801.0125
Wisconsin	Waukesha	321-324	Voice	General	Use	771.0125	801.0125
Illinois	Winnebago	325-328	Voice	General	Use	771.0375	801.0375
Indiana	Porter	325-328	Voice	General	Use	771.0375	801.0375
Illinois	Will	329-332	Voice	General	Use	771.0625	801.0625
Indiana	St. Joseph	329-332	Voice	General	Use	771.0625	801.0625
Wisconsin	Dane	329-332	Voice	General	Use	771.0625	801.0625
Illinois	McHenry	333-336	Voice	General	Use	771.0875	801.0875
Indiana	Newton	333-336	Voice	General	Use	771.0875	801.0875
Wisconsin	Ozaukee	333-336	Voice	General	Use	771.0875	801.0875
Illinois	Du Page	337-340	Voice	General	Use	771.1125	801.1125
Wisconsin	Jefferson	337-340	Voice	General	Use	771.1125	801.1125
Illinois	Lake, IL	341-344	Voice	General	Use	771.1375	801.1375
Indiana	Elkhart	345-348	Voice	General	Use	771.1625	801.1625
Indiana	Lake, IN	345-348	Voice	General	Use	771.1625	801.1625
Wisconsin	Rock	345-348	Voice	General	Use	771.1625	801.1625
Indiana	La Porte	349-352	Voice	General	Use	771.1875	801.1875
Wisconsin	Kenosha	349-352	Voice	General	Use	771.1875	801.1875
Illinois	Kane	353-356	Voice	General	Use	771.2125	801.2125
Wisconsin	Milwaukee	353-356	Voice	General	Use	771.2125	801.2125
Illinois	Kankakee	357-360	Voice	General	Use	771.2375	801.2375
Wisconsin	Walworth	357-360	Voice	General	Use	771.2375	801.2375
Illinois	Cook	361-364	Voice	General	Use	771.2625	801.2625
Indiana	Marshall	361-364	Voice	General	Use	771.2625	801.2625
Wisconsin	Washington	361-364	Voice	General	Use	771.2625	801.2625
Indiana	Porter	365-368	Voice	General	Use	771.2875	801.2875
Wisconsin	Racine	365-368	Voice	General	Use	771.2875	801.2875
Illinois	Boone	369-372	Voice	General	Use	771.3125	801.3125

Illinois	Will	369-372	Voice	General	Use	771.3125	801.3125
Indiana	St. Joseph	373-376	Voice	General	Use	771.3375	801.3375
Wisconsin	Waukesha	373-376	Voice	General	Use	771.3375	801.3375
Illinois	Kendall	377-380	Voice	General	Use	771.3625	801.3625
Indiana	Jasper	377-380	Voice	General	Use	771.3625	801.3625
Wisconsin	Dane	377-380	Voice	General	Use	771.3625	801.3625
Illinois	Winnebago	381-384	Voice	General	Use	771.3875	801.3875
Illinois	Grundy	385-388	Voice	General	Use	771.4125	801.4125
Illinois	McHenry	385-388	Voice	General	Use	771.4125	801.4125
Indiana	Elkhart	385-388	Voice	General	Use	771.4125	801.4125
Indiana	Lake, IN	385-388	Voice	General	Use	771.4125	801.4125
Wisconsin	Dodge	385-388	Voice	General	Use	771.4125	801.4125
Illinois	Du Page	389-392	Voice	General	Use	771.4375	801.4375
Wisconsin	Ozaukee	389-392	Voice	General	Use	771.4375	801.4375
Illinois	Lake, IL	393-396	Voice	General	Use	771.4625	801.4625
Indiana	Newton	393-396	Voice	General	Use	771.4625	801.4625
Indiana	La Porte	397-400	Voice	General	Use	771.4875	801.4875
Wisconsin	Milwaukee	397-400	Voice	General	Use	771.4875	801.4875
Illinois	Kankakee	401-404	Voice	General	Use	771.5125	801.5125
Wisconsin	Dane	401-404	Voice	General	Use	771.5125	801.5125
Wisconsin	Jefferson	401-404	Voice	General	Use	771.5125	801.5125
Illinois	Cook	405-408	Voice	General	Use	771.5375	801.5375
Indiana	Marshall	405-408	Voice	General	Use	771.5375	801.5375
Indiana	Porter	409-412	Voice	General	Use	771.5625	801.5625
Wisconsin	Rock	409-412	Voice	General	Use	771.5625	801.5625
Illinois	Kane	413-416	Voice	General	Use	771.5875	801.5875
Wisconsin	Waukesha	413-416	Voice	General	Use	771.5875	801.5875
Wisconsin	Kenosha	417-420	Voice	General	Use	771.6125	801.6125
Illinois	Will	421-424	Voice	General	Use	771.6375	801.6375
Wisconsin	Dane	421-424	Voice	General	Use	771.6375	801.6375
Indiana	Starke	425-428	Voice	General	Use	771.6625	801.6625
Wisconsin	Walworth	425-428	Voice	General	Use	771.6625	801.6625
Illinois	Kendall	429-432	Voice	General	Use	771.6875	801.6875
Indiana	Elkhart	429-432	Voice	General	Use	771.6875	801.6875
Indiana	Lake, IN	429-432	Voice	General	Use	771.6875	801.6875
Illinois	Lake, IL	433-436	Voice	General	Use	771.7125	801.7125
Wisconsin	Ozaukee	433-436	Voice	General	Use	771.7125	801.7125
Illinois	Du Page	437-440	Voice	General	Use	771.7375	801.7375
Illinois	Winnebago	437-440	Voice	General	Use	771.7375	801.7375

Indiana	Pulaski	437-440	Voice	General	Use	771.7375	801.7375
Wisconsin	Dodge	437-440	Voice	General	Use	771.7375	801.7375
Illinois	McHenry	441-444	Voice	General	Use	771.7625	801.7625
Indiana	St. Joseph	445-448	Voice	General	Use	771.7875	801.7875
Wisconsin	Washington	445-448	Voice	General	Use	771.7875	801.7875
Indiana	Porter	449-452	Voice	General	Use	771.8125	801.8125
Wisconsin	Racine	449-452	Voice	General	Use	771.8125	801.8125
Illinois	Kankakee	453-456	Voice	General	Use	771.8375	801.8375
Indiana	Marshall	453-456	Voice	General	Use	771.8375	801.8375
Wisconsin	Dane	453-456	Voice	General	Use	771.8375	801.8375
Wisconsin	Waukesha	457-460	Voice	General	Use	771.8625	801.8625
Illinois	Boone	461-464	Voice	General	Use	771.8875	801.8875
Illinois	Will	461-464	Voice	General	Use	771.8875	801.8875
Indiana	La Porte	465-468	Voice	General	Use	771.9125	801.9125
Wisconsin	Dane	465-468	Voice	General	Use	771.9125	801.9125
Wisconsin	Kenosha	465-468	Voice	General	Use	771.9125	801.9125
Illinois	Kane	469-472	Voice	General	Use	771.9375	801.9375
Indiana	Lake, IN	469-472	Voice	General	Use	771.9375	801.9375
Wisconsin	Milwaukee	469-472	Voice	General	Use	771.9375	801.9375
Indiana	Elkhart	473-476	Voice	General	Use	771.9625	801.9625
Wisconsin	Rock	473-476	Voice	General	Use	771.9625	801.9625
Illinois	Cook	477-480	Voice	General	Use	771.9875	801.9875
Indiana	Pulaski	477-480	Voice	General	Use	771.9875	801.9875
Wisconsin	Dodge	477-480	Voice	General	Use	771.9875	801.9875
Indiana	St. Joseph	485-488	Voice	General	Use	772.0375	802.0375
Wisconsin	Walworth	485-488	Voice	General	Use	772.0375	802.0375
Illinois	Du Page	489-492	Voice	General	Use	772.0625	802.0625
Indiana	Jasper	489-492	Voice	General	Use	772.0625	802.0625
Illinois	Kankakee	493-496	Voice	General	Use	772.0875	802.0875
Illinois	Lake, IL	493-496	Voice	General	Use	772.0875	802.0875
Wisconsin	Ozaukee	493-496	Voice	General	Use	772.0875	802.0875
Indiana	Porter	497-500	Voice	General	Use	772.1125	802.1125
Wisconsin	Dane	497-500	Voice	General	Use	772.1125	802.1125
Wisconsin	Washington	501-504	Voice	General	Use	772.1375	802.1375
Illinois	Kendall	505-508	Voice	General	Use	772.1625	802.1625
Indiana	La Porte	505-508	Voice	General	Use	772.1625	802.1625
Wisconsin	Dane	505-508	Voice	General	Use	772.1625	802.1625
Wisconsin	Kenosha	509-512	Voice	General	Use	772.1875	802.1875
Illinois	Kane	513-516	Voice	General	Use	772.2125	802.2125

Indiana	Newton	513-516	Voice	General	Use	772.2125	802.2125
Wisconsin	Waukesha	513-516	Voice	General	Use	772.2125	802.2125
Illinois	Grundy	517-520	Voice	General	Use	772.2375	802.2375
Illinois	Winnebago	517-520	Voice	General	Use	772.2375	802.2375
Indiana	Starke	517-520	Voice	General	Use	772.2375	802.2375
Illinois	McHenry	521-524	Voice	General	Use	772.2625	802.2625
Indiana	Lake, IN	525-528	Voice	General	Use	772.2875	802.2875
Wisconsin	Jefferson	525-528	Voice	General	Use	772.2875	802.2875
Indiana	Elkhart	529-532	Voice	General	Use	772.3125	802.3125
Wisconsin	Racine	529-532	Voice	General	Use	772.3125	802.3125
Illinois	Lake, IL	533-536	Voice	General	Use	772.3375	802.3375
Indiana	Pulaski	533-536	Voice	General	Use	772.3375	802.3375
Wisconsin	Ozaukee	533-536	Voice	General	Use	772.3375	802.3375
Illinois	Boone	537-540	Voice	General	Use	772.3625	802.3625
Wisconsin	Dodge	537-540	Voice	General	Use	772.3625	802.3625
Illinois	Cook	541-544	Voice	General	Use	772.3875	802.3875
Indiana	St. Joseph	541-544	Voice	General	Use	772.3875	802.3875
Wisconsin	Milwaukee	541-544	Voice	General	Use	772.3875	802.3875
Indiana	Jasper	545-548	Voice	General	Use	772.4125	802.4125
Wisconsin	Walworth	545-548	Voice	General	Use	772.4125	802.4125
Wisconsin	Dane	549-552	Voice	General	Use	772.4375	802.4375
Wisconsin	Washington	549-552	Voice	General	Use	772.4375	802.4375
Illinois	Du Page	553-556	Voice	General	Use	772.4625	802.4625
Wisconsin	Dane	553-556	Voice	General	Use	772.4625	802.4625
Illinois	Grundy	557-560	Voice	General	Use	772.4875	802.4875
Indiana	Marshall	557-560	Voice	General	Use	772.4875	802.4875
Wisconsin	Kenosha	557-560	Voice	General	Use	772.4875	802.4875
Wisconsin	Rock	561-564	Voice	General	Use	772.5125	802.5125
Illinois	Kane	565-568	Voice	General	Use	772.5375	802.5375
Indiana	La Porte	565-568	Voice	General	Use	772.5375	802.5375
Wisconsin	Waukesha	565-568	Voice	General	Use	772.5375	802.5375
Indiana	Elkhart	569-572	Voice	General	Use	772.5625	802.5625
Indiana	Lake, IN	569-572	Voice	General	Use	772.5625	802.5625
Illinois	McHenry	573-576	Voice	General	Use	772.5875	802.5875
Indiana	Starke	573-576	Voice	General	Use	772.5875	802.5875
Illinois	Kankakee	577-580	Voice	General	Use	772.6125	802.6125
Illinois	Winnebago	577-580	Voice	General	Use	772.6125	802.6125
Wisconsin	Ozaukee	577-580	Voice	General	Use	772.6125	802.6125
Illinois	Cook	581-584	Voice	General	Use	772.6375	802.6375

Wisconsin	Jefferson	581-584	Voice	General	Use	772.6375	802.6375
Indiana	Porter	585-588	Voice	General	Use	772.6625	802.6625
Wisconsin	Racine	585-588	Voice	General	Use	772.6625	802.6625
Illinois	Boone	589-592	Voice	General	Use	772.6875	802.6875
Illinois	Lake, IL	593-596	Voice	General	Use	772.7125	802.7125
Indiana	Newton	593-596	Voice	General	Use	772.7125	802.7125
Wisconsin	Washington	593-596	Voice	General	Use	772.7125	802.7125
Illinois	Will	597-600	Voice	General	Use	772.7375	802.7375
Indiana	Jasper	601-604	Voice	General	Use	772.7625	802.7625
Wisconsin	Dane	601-604	Voice	General	Use	772.7625	802.7625
Illinois	Grundy	605-608	Voice	General	Use	772.7875	802.7875
Indiana	St. Joseph	605-608	Voice	General	Use	772.7875	802.7875
Wisconsin	Waukesha	605-608	Voice	General	Use	772.7875	802.7875
Wisconsin	Dane	609-612	Voice	General	Use	772.8125	802.8125
Illinois	Kane	613-616	Voice	General	Use	772.8375	802.8375
Indiana	Lake, IN	613-616	Voice	General	Use	772.8375	802.8375
Wisconsin	Milwaukee	613-616	Voice	General	Use	772.8375	802.8375
Indiana	Starke	617-620	Voice	General	Use	772.8625	802.8625
Wisconsin	Kenosha	617-620	Voice	General	Use	772.8625	802.8625
Illinois	Cook	621-624	Voice	General	Use	772.8875	802.8875
Wisconsin	Jefferson	621-624	Voice	General	Use	772.8875	802.8875
Indiana	Porter	625-628	Voice	General	Use	772.9125	802.9125
Wisconsin	Racine	625-628	Voice	General	Use	772.9125	802.9125
Illinois	Du Page	629-632	Voice	General	Use	772.9375	802.9375
Indiana	Elkhart	629-632	Voice	General	Use	772.9375	802.9375
Wisconsin	Ozaukee	629-632	Voice	General	Use	772.9375	802.9375
Wisconsin	Rock	629-632	Voice	General	Use	772.9375	802.9375
Illinois	Lake, IL	633-636	Voice	General	Use	772.9625	802.9625
Illinois	Will	637-640	Voice	General	Use	772.9875	802.9875
Illinois	Winnebago	637-640	Voice	General	Use	772.9875	802.9875
Wisconsin	Washington	637-640	Voice	General	Use	772.9875	802.9875
National		641-642	Voice	National	Interop	773.00625	803.00625
National		643-644	Voice	National	Reserved	773.01875	803.01875
Illinois	Cook	645-648	Voice	State	License	773.0375	803.0375
Indiana	St. Joseph	645-648	Voice	State	License	773.0375	803.0375
Wisconsin	Waukesha	645-648	Voice	State	License	773.0375	803.0375
Illinois	Kankakee	649-652	Voice	State	License	773.0625	803.0625
Wisconsin	Kenosha	649-652	Voice	State	License	773.0625	803.0625
Illinois	Kane	653-656	Voice	State	License	773.0875	803.0875

Indiana	La Porte	653-656	Voice	State	License	773.0875	803.0875
Wisconsin	Dane	653-656	Voice	State	License	773.0875	803.0875
Wisconsin	Milwaukee	653-656	Voice	State	License	773.0875	803.0875
National		657-658	Voice	National	Interop	773.10625	803.10625
National		659-660	Voice	National	Air to Ground	773.11875	803.11875
Illinois	Cook	661-664	Voice	General	Use	773.1375	803.1375
Indiana	Pulaski	661-664	Voice	General	Use	773.1375	803.1375
Wisconsin	Dane	661-664	Voice	General	Use	773.1375	803.1375
Wisconsin	Milwaukee	661-664	Voice	General	Use	773.1375	803.1375
Illinois	Kankakee	665-668	Voice	General	Use	773.1625	803.1625
Indiana	St. Joseph	665-668	Voice	General	Use	773.1625	803.1625
Wisconsin	Kenosha	665-668	Voice	General	Use	773.1625	803.1625
Illinois	Du Page	669-672	Voice	General	Use	773.1875	803.1875
Wisconsin	Ozaukee	669-672	Voice	General	Use	773.1875	803.1875
Wisconsin	Rock	669-672	Voice	General	Use	773.1875	803.1875
Illinois	Lake, IL	673-676	Voice	General	Use	773.2125	803.2125
Indiana	Jasper	673-676	Voice	General	Use	773.2125	803.2125
Illinois	Will	677-680	Voice	General	Use	773.2375	803.2375
Indiana	Marshall	677-680	Voice	General	Use	773.2375	803.2375
Wisconsin	Waukesha	677-680	Voice	General	Use	773.2375	803.2375
National		681-682	Voice	National	Call-In	773.25625	803.25625
National		683-684	Voice	National	Reserved	773.26875	803.26875
Illinois	Cook	685-688	Voice	State	License	773.2875	803.2875
Indiana	St. Joseph	685-688	Voice	State	License	773.2875	803.2875
Wisconsin	Waukesha	685-688	Voice	State	License	773.2875	803.2875
Illinois	Boone	689-692	Voice	State	License	773.3125	803.3125
Indiana	Porter	689-692	Voice	State	License	773.3125	803.3125
Illinois	Will	693-696	Voice	State	License	773.3375	803.3375
Indiana	Marshall	693-696	Voice	State	License	773.3375	803.3375
Wisconsin	Dane	693-696	Voice	State	License	773.3375	803.3375
Wisconsin	Racine	693-696	Voice	State	License	773.3375	803.3375
National		697-698	Voice	National	Interop	773.35625	803.35625
National		699-700	Voice	National	Reserved	773.36875	803.36875
Illinois	Cook	701-704	Voice	General	Use	773.3875	803.3875
Indiana	Elkhart	705-708	Voice	General	Use	773.4125	803.4125
Wisconsin	Dane	705-708	Voice	General	Use	773.4125	803.4125
Wisconsin	Dane	705-708	Voice	General	Use	773.4125	803.4125
Wisconsin	Milwaukee	705-708	Voice	General	Use	773.4125	803.4125
Illinois	Grundy	709-712	Voice	General	Use	773.4375	803.4375

Indiana	Lake, IN	709-712	Voice	General	Use	773.4375	803.4375
Illinois	Lake, IL	713-716	Voice	General	Use	773.4625	803.4625
Illinois	Winnebago	713-716	Voice	General	Use	773.4625	803.4625
Indiana	La Porte	713-716	Voice	General	Use	773.4625	803.4625
Illinois	Du Page	717-720	Voice	General	Use	773.4875	803.4875
Wisconsin	Waukesha	717-720	Voice	General	Use	773.4875	803.4875
National		721-722	Voice	National	Interop	773.50625	803.50625
National		723-724	Voice	National	Reserved	773.51875	803.51875
Illinois	Cook	725-728	Voice	State	License	773.5375	803.5375
Indiana	St. Joseph	725-728	Voice	State	License	773.5375	803.5375
Wisconsin	Milwaukee	725-728	Voice	State	License	773.5375	803.5375
Wisconsin	Kenosha	729-732	Voice	State	License	773.5625	803.5625
Illinois	Kane	733-736	Voice	State	License	773.5875	803.5875
Indiana	Lake, IN	733-736	Voice	State	License	773.5875	803.5875
Indiana	Marshall	733-736	Voice	State	License	773.5875	803.5875
Wisconsin	Waukesha	733-736	Voice	State	License	773.5875	803.5875
National		737-738	Voice	National	Interop	773.60625	803.60625
National		739-740	Voice	National	Air to Ground	773.61875	803.61875
Illinois	Cook	741-744	Voice	General	Use	773.6375	803.6375
Indiana	Marshall	741-744	Voice	General	Use	773.6375	803.6375
Indiana	Jasper	745-748	Voice	General	Use	773.6625	803.6625
Wisconsin	Dane	745-748	Voice	General	Use	773.6625	803.6625
Wisconsin	Dane	745-748	Voice	General	Use	773.6625	803.6625
Wisconsin	Milwaukee	745-748	Voice	General	Use	773.6625	803.6625
Illinois	Will	749-752	Voice	General	Use	773.6875	803.6875
Wisconsin	Kenosha	749-752	Voice	General	Use	773.6875	803.6875
Indiana	Elkhart	753-756	Voice	General	Use	773.7125	803.7125
Wisconsin	Rock	753-756	Voice	General	Use	773.7125	803.7125
Illinois	Du Page	757-760	Voice	General	Use	773.7375	803.7375
Indiana	La Porte	757-760	Voice	General	Use	773.7375	803.7375
Wisconsin	Waukesha	757-760	Voice	General	Use	773.7375	803.7375
National		761-762	Voice	National	Interop	773.75625	803.75625
National		763-764	Voice	National	Reserved	773.76875	803.76875
Illinois	Cook	765-768	Voice	State	License	773.7875	803.7875
Indiana	St. Joseph	765-768	Voice	State	License	773.7875	803.7875
Wisconsin	Dane	765-768	Voice	State	License	773.7875	803.7875
Wisconsin	Milwaukee	765-768	Voice	State	License	773.7875	803.7875
Indiana	Porter	769-772	Voice	State	License	773.8125	803.8125
Wisconsin	Walworth	769-772	Voice	State	License	773.8125	803.8125

Illinois	Du Page	773-776	Voice	State	License	773.8375	803.8375
Illinois	Winnebago	773-776	Voice	State	License	773.8375	803.8375
Indiana	Elkhart	773-776	Voice	State	License	773.8375	803.8375
Wisconsin	Washington	773-776	Voice	State	License	773.8375	803.8375
National		777-778	Voice	National	Interop	773.85625	803.85625
National		779-780	Voice	National	Reserved	773.86875	803.86875
Illinois	Cook	781-784	Voice	General	Use	773.8875	803.8875
Indiana	St. Joseph	781-784	Voice	General	Use	773.8875	803.8875
Indiana	Porter	785-788	Voice	General	Use	773.9125	803.9125
Wisconsin	Dane	785-788	Voice	General	Use	773.9125	803.9125
Wisconsin	Milwaukee	785-788	Voice	General	Use	773.9125	803.9125
Illinois	Will	789-792	Voice	General	Use	773.9375	803.9375
Wisconsin	Kenosha	789-792	Voice	General	Use	773.9375	803.9375
Illinois	Winnebago	793-796	Voice	General	Use	773.9625	803.9625
Illinois	Kane	797-800	Voice	General	Use	773.9875	803.9875
Indiana	Elkhart	797-800	Voice	General	Use	773.9875	803.9875
Indiana	Lake, IN	797-800	Voice	General	Use	773.9875	803.9875
Wisconsin	Waukesha	797-800	Voice	General	Use	773.9875	803.9875
National		801-802	Voice	National	Interop	774.00625	804.00625
National		803-804	Voice	National	Reserved	774.01875	804.01875
Illinois	Cook	805-808	Voice	State	License	774.0375	804.0375
Indiana	St. Joseph	805-808	Voice	State	License	774.0375	804.0375
Wisconsin	Dane	805-808	Voice	State	License	774.0375	804.0375
Wisconsin	Milwaukee	805-808	Voice	State	License	774.0375	804.0375
Illinois	Kankakee	809-812	Voice	State	License	774.0625	804.0625
Wisconsin	Dane	809-812	Voice	State	License	774.0625	804.0625
Illinois	Lake, IL	813-816	Voice	State	License	774.0875	804.0875
Indiana	Jasper	813-816	Voice	State	License	774.0875	804.0875
Wisconsin	Ozaukee	813-816	Voice	State	License	774.0875	804.0875
National		817-818	Voice	National	Interop	774.10625	804.10625
National		819-820	Voice	National	Air to Ground	774.11875	804.11875
Illinois	Cook	821-824	Voice	General	Use	774.1375	804.1375
Indiana	St. Joseph	821-824	Voice	General	Use	774.1375	804.1375
Wisconsin	Washington	821-824	Voice	General	Use	774.1375	804.1375
Indiana	Porter	825-828	Voice	General	Use	774.1625	804.1625
Wisconsin	Walworth	825-828	Voice	General	Use	774.1625	804.1625
Illinois	Du Page	829-832	Voice	General	Use	774.1875	804.1875
Wisconsin	Dane	829-832	Voice	General	Use	774.1875	804.1875
Wisconsin	Milwaukee	829-832	Voice	General	Use	774.1875	804.1875

Illinois	Lake, IL	833-836	Voice	General	Use	774.2125	804.2125
Illinois	Winnebago	833-836	Voice	General	Use	774.2125	804.2125
Indiana	La Porte	833-836	Voice	General	Use	774.2125	804.2125
Illinois	Will	837-840	Voice	General	Use	774.2375	804.2375
Indiana	Elkhart	837-840	Voice	General	Use	774.2375	804.2375
Wisconsin	Racine	837-840	Voice	General	Use	774.2375	804.2375
National		841-842	Voice	National	Interop	774.25625	804.25625
National		843-844	Voice	National	Reserved	774.26875	804.26875
Illinois	Cook	845-848	Voice	State	License	774.2875	804.2875
Indiana	Pulaski	845-848	Voice	State	License	774.2875	804.2875
Wisconsin	Dane	845-848	Voice	State	License	774.2875	804.2875
Wisconsin	Milwaukee	845-848	Voice	State	License	774.2875	804.2875
Illinois	Kendall	849-852	Voice	State	License	774.3125	804.3125
Illinois	Winnebago	849-852	Voice	State	License	774.3125	804.3125
Illinois	McHenry	853-856	Voice	State	License	774.3375	804.3375
Indiana	Elkhart	853-856	Voice	State	License	774.3375	804.3375
Indiana	Lake, IN	853-856	Voice	State	License	774.3375	804.3375
Wisconsin	Washington	853-856	Voice	State	License	774.3375	804.3375
National		857-858	Voice	National	Interop	774.35625	804.35625
National		859-860	Voice	National	Reserved	774.36875	804.36875
Illinois	Cook	861-864	Voice	General	Use	774.3875	804.3875
Indiana	St. Joseph	861-864	Voice	General	Use	774.3875	804.3875
Wisconsin	Waukesha	861-864	Voice	General	Use	774.3875	804.3875
Illinois	Boone	865-868	Voice	General	Use	774.4125	804.4125
Illinois	Kankakee	865-868	Voice	General	Use	774.4125	804.4125
Illinois	Du Page	869-872	Voice	General	Use	774.4375	804.4375
Indiana	Starke	869-872	Voice	General	Use	774.4375	804.4375
Wisconsin	Dane	869-872	Voice	General	Use	774.4375	804.4375
Wisconsin	Milwaukee	869-872	Voice	General	Use	774.4375	804.4375
Illinois	Lake, IL	873-876	Voice	General	Use	774.4625	804.4625
Illinois	Winnebago	873-876	Voice	General	Use	774.4625	804.4625
Illinois	Will	877-880	Voice	General	Use	774.4875	804.4875
Wisconsin	Racine	877-880	Voice	General	Use	774.4875	804.4875
National		881-882	Voice	National	Interop	774.50625	804.50625
National		883-884	Voice	National	Reserved	774.51875	804.51875
Illinois	Cook	885-888	Voice	State	License	774.5375	804.5375
Indiana	St. Joseph	885-888	Voice	State	License	774.5375	804.5375
Wisconsin	Milwaukee	885-888	Voice	State	License	774.5375	804.5375
Indiana	Porter	889-892	Voice	State	License	774.5625	804.5625

Wisconsin	Rock	889-892	Voice	State	License	774.5625	804.5625
Illinois	Kankakee	893-896	Voice	State	License	774.5875	804.5875
Illinois	Lake, IL	893-896	Voice	State	License	774.5875	804.5875
Indiana	Elkhart	893-896	Voice	State	License	774.5875	804.5875
Wisconsin	Dodge	893-896	Voice	State	License	774.5875	804.5875
National		897-898	Voice	National	Interop	774.60625	804.60625
National		899-900	Voice	National	Air to Ground	774.61875	804.61875
Illinois	Cook	901-904	Voice	General	Use	774.6375	804.6375
Indiana	Pulaski	901-904	Voice	General	Use	774.6375	804.6375
Wisconsin	Dodge	901-904	Voice	General	Use	774.6375	804.6375
Illinois	Kankakee	905-908	Voice	General	Use	774.6625	804.6625
Indiana	St. Joseph	905-908	Voice	General	Use	774.6625	804.6625
Wisconsin	Walworth	905-908	Voice	General	Use	774.6625	804.6625
Illinois	Kane	909-912	Voice	General	Use	774.6875	804.6875
Indiana	Elkhart	913-916	Voice	General	Use	774.7125	804.7125
Indiana	Lake, IN	913-916	Voice	General	Use	774.7125	804.7125
Wisconsin	Waukesha	913-916	Voice	General	Use	774.7125	804.7125
Illinois	Du Page	917-920	Voice	General	Use	774.7375	804.7375
Wisconsin	Rock	917-920	Voice	General	Use	774.7375	804.7375
National		921-922	DATA	National	Low Speed	774.75625	804.75625
National		923-924	Voice	National	Reserved	774.76875	804.76875
Illinois	Cook	925-928	Voice	State	License	774.7875	804.7875
Indiana	St. Joseph	925-928	Voice	State	License	774.7875	804.7875
Wisconsin	Dane	925-928	Voice	State	License	774.7875	804.7875
Wisconsin	Milwaukee	925-928	Voice	State	License	774.7875	804.7875
Indiana	Porter	929-932	Voice	State	License	774.8125	804.8125
Wisconsin	Dane	929-932	Voice	State	License	774.8125	804.8125
Illinois	Will	933-936	Voice	State	License	774.8375	804.8375
Indiana	Marshall	933-936	Voice	State	License	774.8375	804.8375
Wisconsin	Racine	933-936	Voice	State	License	774.8375	804.8375
National		937-938	Voice	National	Interop	774.85625	804.85625
National		939-940	Voice	National	Reserved	774.86875	804.86875
Illinois	Kendall	941-944	Voice	General	Use	774.8875	804.8875
Illinois	Winnebago	941-944	Voice	General	Use	774.8875	804.8875
Indiana	Porter	941-944	Voice	General	Use	774.8875	804.8875
Wisconsin	Dodge	941-944	Voice	General	Use	774.8875	804.8875
Illinois	Cook	945-948	Voice	General	Use	774.9125	804.9125
Indiana	St. Joseph	945-948	Voice	General	Use	774.9125	804.9125

Wisconsin	Milwaukee	945-948	Voice	General	Use	774.9125	804.9125
National		949-950	Voice	National	LP	774.93125	804.93125
National		951-952	Voice	National	LP	774.94375	804.94375
National		953-954	Voice	National	LP	774.95625	804.95625
National		955-956	Voice	National	LP	774.96875	804.96875
National		957-958	Voice	National	LP	774.98125	804.98125
National		959-960	Voice	National	LP	774.99375	804.99375

Appendix I-700 MHz Secondary LPTV

Secondary LPTV and/or TV Translator Station and Call Sign Address

To Whom It May Concern:

This letter serves as formal notification of the implementation of a public safety land mobile communications system located in (location/call sign). By this letter, (TV Station Call Sign/location) is reminded that its operations are secondary to this primary public safety land mobile operation. Low power TV stations and TV translators may not cause interference to this public safety system and must accept any interfere they might receive from these operations.[1]

Sincerely,

Chris Kindelspire
Region 54 Chairman
78 W Lowery Rd
Morris, IL 60450
ckindelspire@grundy911.org

1 The Report and Order on ET Docket No. 97-157 (FCC 97-421) for the "Reallocation of Television Channels 60-69, the 746-806 MHz Band," clearly defined Land Mobile operations as a “primary service” and that Low power TV and TV translator operations are secondary to all primary services in this band (see paragraphs 14 and 25-31).

Appendix J-700 MHz SIEC Plan

Region 54 occupies three states. For up-to-date SIEC plan information, Region 54 recommends looking up the respective State's plan of interest.

Appendix K – 700 MHz Interoperability/Channel Nomenclature

Project 25 Common Air Interface
Interoperability Channel Technical Parameters

Certain common P25 parameters need to be defined to ensure digital radios operating on the 700 MHz Interoperability Channels can communicate. This is analogous to defining the common CTCSS tone used on NPSPAC analog Interoperability channels.

Network Access Code

In the Project 25 Common Air Interface definition, the Network Access Code (NAC) is analogous to the use of CTCSS and CDCSS signals in analog radio systems. It is a code transmitted in the pre-amble of the P25 signal and repeated periodically throughout the transmission. Its purpose is to provide selective access to and maintain access to a receiver. It is also used to block nuisance and other co-channel signals. There are up to 4096 of these NAC codes. For ease of migration in other frequency bands, a NAC code table was developed which shows a mapping of CTCSS and CDCSS signals into corresponding NAC codes. Document TIA/EIA TSB102.BAAC contains NAC code table and other Project 25 Common Air Interface Reserve Values.

The use of NAC code $293 is required for the 700 MHz Interoperability Channel NAC code.

Talk group ID

In the Project 25 Common Air Interface definition, the Talk group ID on conventional channels is analogous to the use of talk groups in trunking. In order to ensure that all users can communicate, all units should use a common Talk group ID.

Recommendation: Use P25 default value for Talk group ID = $0001

Manufacturer's ID

The Project 25 Common Air Interface allows the ability to define manufacturer specific functions. In order to ensure that all users can communicate, all units should not use a specific Manufacturer's ID, but should use the default value of $00.

Message ID

The Project 25 Common Air Interface allows the ability to define specific message functions. In order to ensure that all users can communicate, all units should use the default Message ID for unencrypted messages of $00000000000000000000.

Encryption Algorithm ID and Key ID

The Project 25 Common Air Interface allows the ability to define specific encryption algorithms and encryption keys. In order to ensure that all users can communicate, encryption should not be used on the Interoperability Calling Channels, all units should use the default Algorithm ID for unencrypted messages of $80 and default Key ID for unencrypted messages of $0000. These same defaults may be used for the other Interoperability channels when encryption is not used.

Use of encryption is allowed on the other Interoperability channels. Regional Planning Committees need to define appropriate Message ID, Encryption Algorithm ID, and Encryption Key ID to be used in the encrypted mode on Interoperability channels.

Subscriber Channel Configur A1:L83atio	Common Name		Eligible Users	Subscriber RX Freq (MHz)	RX Tone or NAC	Subscriber TX Freq (MHz)	Tx Tone or NAC	Dev	Pwr	Mode A or D	Limitations
	Long Name	Short Name									
FCC 700 MHz Public Safety Band											
F, M	7AG58	7AG58	Air - Ground	769.13125	$F7E	799.13125	$293	N	L	D	90.531(b)(7)
B, M	7AG58D	7AG58D	Air - Ground	769.13125	$F7E	769.13125	$293	N	L	D	90.531(b)(7)
F, M	7TAC51	TAC51	General Public Safety	769.14375	$F7E	799.14375	$293	N	H	D	90.531(b)(1)(iii)
B, M	7TAC51D	TAC51D	General Public Safety	769.14375	$F7E	769.14375	$293	N	H	D	90.531(b)(1)(iii)
F, M	7CALL50	CAL50	Calling Channel	769.24375	$F7E	799.24375	$293	N	H	D	90.531(b)(1)(ii) ***Note 700-1***
B, M	7CALL50D	CAL50D	Calling Channel	769.24375	$F7E	769.24375	$293	N	H	D	90.531(b)(1)(ii) ***Note 700-1***
F, M	7MED65	MED65	EMS	769.39375	$F7E	799.39375	$293	N	H	D	
B, M	7MED65D	MED65D	EMS	769.39375	$F7E	769.39375	$293	N	H	D	
F, M	7MED66	MED66	EMS	769.49375	$F7E	799.49375	$293	N	H	D	
B, M	7MED66D	MED66D	EMS	769.49375	$F7E	769.49375	$293	N	H	D	
F, M	7AG60	7AG60	Air - Ground	769.63125	$F7E	799.63125	$293	N	L	D	90.531(b)(7)
B, M	7AG60D	7AG60D	Air - Ground	769.63125	$F7E	769.63125	$293	N	L	D	90.531(b)(7)
F, M	7TAC52	TAC52	General Public Safety	769.64375	$F7E	799.64375	$293	N	H	D	90.531(b)(1)(iii)
B, M	7TAC52D	TAC52D	General Public Safety	769.64375	$F7E	769.64375	$293	N	H	D	90.531(b)(1)(iii)
F, M	7TAC55	TAC55	General Public Safety	769.74375	$F7E	799.74375	$293	N	H	D	
B, M	7TAC55D	TAC55D	General Public Safety	769.74375	$F7E	769.74375	$293	N	H	D	
F, M	7FIRE63	FIR63	Fire	769.89375	$F7E	799.89375	$293	N	H	D	
B, M	7FIRE63D	FIR63D	Fire	769.89375	$F7E	769.89375	$293	N	H	D	
F, M	7FIRE64	FIR64	Fire	769.99375	$F7E	799.99375	$293	N	H	D	
B, M	7FIRE64D	FIR64D	Fire	769.99375	$F7E	769.99375	$293	N	H	D	
F, M	7AG67	7AG67	Air - Ground	770.13125	$F7E	800.13125	$293	N	L	D	90.531(b)(7)
B, M	7AG67D	7AG67D	Air - Ground	770.13125	$F7E	770.13125	$293	N	L	D	90.531(b)(7)
F, M	7TAC53	TAC53	General Public Safety	770.14375	$F7E	800.14375	$293	N	H	D	90.531(b)(1)(iii)
B, M	7TAC53D	TAC53D	General Public Safety	770.14375	$F7E	770.14375	$293	N	H	D	90.531(b)(1)(iii)
F, M	7TAC56	TAC56	General Public Safety	770.24375	$F7E	770.24375	$293	N	H	D	
B, M	7TAC56D	TAC56D	General Public Safety	770.24375	$F7E	800.24375	$293	N	H	D	
F, M	7LAW61	LAW61	Law Enforcement	770.39375	$F7E	800.39375	$293	N	H	D	
B, M	7LAW61D	LAW61D	Law Enforcement	770.39375	$F7E	770.39375	$293	N	H	D	
F, M	7LAW62	7LAW62	Law Enforcement	770.49375	$F7E	800.49375	$293	N	H	D	
B, M	7LAW62D	LAW62D	Law Enforcement	770.49375	$F7E	770.49375	$293	N	H	D	
F, M	7AG68	7AG68	Air - Ground	770.63125	$F7E	800.63125	$293	N	L	D	90.531(b)(7)
B, M	7AG68D	7AG68D	Air - Ground	770.63125	$F7E	770.63125	$293	N	L	D	90.531(b)(7)
F, M	7TAC54	TAC54	General Public Safety	770.64375	$F7E	800.64375	$293	N	H	D	90.531(b)(1)(iii)
B, M	7TAC54D	TAC54D	General Public Safety	770.64375	$F7E	770.64375	$293	N	H	D	90.531(b)(1)(iii)
F, M	7DATA69	DAT69	Mobile Data	770.74375	$F7E	800.74375	$293	N	H	D	90.531(b)(1)(i) ***Note 700-2***
B, M	7DATA69D	DAT69D	Mobile Data	770.74375	$F7E	770.74375	$293	N	H	D	90.531(b)(1)(i) ***Note 700-2***
F, M	7MOB59	MOB59	Mobile Repeater *(M03 Pri.)*	770.89375	$F7E	800.89375	$293	N	L	D	
B, M	7MOB59D	MOB59D	Mobile Repeater *(M03 Pri.)*	770.89375	$F7E	770.89375	$293	N	L	D	
F, M	7GTAC57	GTC57	Other Public Service	770.99375	$F7E	800.99375	$293	N	H	D	
B, M	7GTAC57D	GTC57D	Other Public Service	770.99375	$F7E	770.99375	$293	N	H	D	
F, M	7MED86	MED86	EMS	773.00625	$F7E	803.00625	$293	N	H	D	
B, M	7MED86D	MED86D	EMS	773.00625	$F7E	773.00625	$293	N	H	D	
F, M	7TAC71	TAC71	General Public Safety	773.10625	$F7E	803.10625	$293	N	H	D	90.531(b)(1)(iii)
B, M	7TAC71D	TAC71D	General Public Safety	773.10625	$F7E	773.10625	$293	N	H	D	90.531(b)(1)(iii)
F, M	7AG78	7AG78	Air - Ground	773.11875	$F7E	803.11875	$293	N	L	D	90.531(b)(7)
B, M	7AG78D	7AG78D	Air - Ground	773.11875	$F7E	773.11875	$293	N	L	D	90.531(b)(7)
F, M	7CALL70	CAL70	Calling Channel	773.25625	$F7E	803.25625	$293	N	H	D	90.531(b)(1)(ii) ***Note 700-1***
B, M	7CALL70D	CAL70D	Calling Channel	773.25625	$F7E	773.25625	$293	N	H	D	90.531(b)(1)(ii) ***Note 700-1***
F, M	7MED87	MED87	EMS	773.35625	$F7E	803.35625	$293	N	H	D	
B, M	7MED87D	MED87D	EMS	773.35625	$F7E	773.35625	$293	N	H	D	
F, M	7FIRE83	FIR83	Fire	773.50625	$F7E	803.50625	$293	N	H	D	
B, M	7FIRE83D	FIR83D	Fire	773.50625	$F7E	773.50625	$293	N	H	D	
F, M	7TAC72	TAC72	General Public Safety	773.60625	$F7E	803.60625	$293	N	H	D	90.531(b)(1)(iii)
B, M	7TAC72D	TAC72D	General Public Safety	773.60625	$F7E	773.60625	$293	N	H	D	90.531(b)(1)(iii)
F, M	7AG80	7AG80	Air - Ground	773.61875	$F7E	803.61875	$293	N	L	D	90.531(b)(7)
B, M	7AG80D	7AG80D	Air - Ground	773.61875	$F7E	773.61875	$293	N	L	D	90.531(b)(7)
F, M	7TAC75	TAC75	General Public Safety	773.75625	$F7E	803.75625	$293	N	H	D	
B, M	7TAC75D	TAC75D	General Public Safety	773.75625	$F7E	773.75625	$293	N	H	D	
F, M	7FIRE84	FIR84	Fire	773.85625	$F7E	803.85625	$293	N	H	D	
B, M	7FIRE84D	FIR84D	Fire	773.85625	$F7E	773.85625	$293	N	H	D	
F, M	7LAW81	LAW81	Law Enforcement	774.00625	$F7E	804.00625	$293	N	H	D	
B, M	7LAW81D	LAW81D	Law Enforcement	774.00625	$F7E	774.00625	$293	N	H	D	
F, M	7TAC73	TAC73	General Public Safety	774.10625	$F7E	804.10625	$293	N	H	D	90.531(b)(1)(iii)
B, M	7TAC73D	TAC73D	General Public Safety	774.10625	$F7E	774.10625	$293	N	H	D	90.531(b)(1)(iii)
F, M	7AG85	7AG85	Air - Ground	774.11875	$F7E	804.11875	$293	N	L	D	90.531(b)(7)
B, M	7AG85D	7AG85D	Air - Ground	774.11875	$F7E	774.11875	$293	N	L	D	90.531(b)(7)
F, M	7TAC76	TAC76	General Public Safety	774.25625	$F7E	804.25625	$293	N	H	D	
B, M	7TAC76D	TAC76D	General Public Safety	774.25625	$F7E	774.25625	$293	N	H	D	
F, M	7LAW82	LAW82	Law Enforcement	774.35625	$F7E	804.35625	$293	N	H	D	
B, M	7LAW82D	LAW82D	Law Enforcement	774.35625	$F7E	774.35625	$293	N	H	D	
F, M	7MOB79	MOB79	Mobile Repeater *(M03 Pri.)*	774.50625	$F7E	804.50625	$293	N	L	D	
B, M	7MOB79D	MOB79D	Mobile Repeater *(M03 Pri.)*	774.50625	$F7E	774.50625	$293	N	L	D	
F, M	7TAC74	TAC74	General Public Safety	774.60625	$F7E	804.60625	$293	N	H	D	90.531(b)(1)(iii)
B, M	7TAC74D	TAC74D	General Public Safety	774.60625	$F7E	774.60625	$293	N	H	D	90.531(b)(1)(iii)
F, M	7AG88	7AG88	Air - Ground	774.61875	$F7E	804.61875	$293	N	L	D	90.531(b)(7)
B, M	7AG88D	7AG88D	Air - Ground	774.61875	$F7E	774.61875	$293	N	L	D	90.531(b)(7) ***Note 700-3***
F, M	7DATA89	DAT89	Mobile Data	774.75625	$F7E	804.75625	$293	N	H	D	90.531(b)(1)(i) ***Note 700-2***
B, M	7DATA89D	DAT89D	Mobile Data	774.75625	$F7E	774.75625	$293	N	H	D	90.531(b)(1)(i) ***Note 700-2***
F, M	7GTAC77	GTC77	Other Public Service	774.85625	$F7E	804.85625	$293	N	H	D	
B, M	7GTAC77D	GTC77D	Other Public Service	774.85625	$F7E	774.85625	$293	N	H	D	

NOTES:

700-1: *7CALL50 / 7CALL50D are recommended as PRIMARY calling pair; 7CALL70 / 7CALL70D are recommended as SECONDARY or INCIDENT calling pair.*

700-2: *Voice communications are permitted on 7DATA69 / 7DATA69D / 7DATA89 / 7DATA89D on a secondary basis.*

700-3: *7AG88D is the recommended primary channel for Landing Zone use.*

Appendix L – Inter-Regional Coordination Procedures and Resolution of Disputes Template

I. INTRODUCTION

a. This is a mutually agreed upon Inter-Regional Coordination Procedures Agreement (Agreement by and between the following 700 MHz Regional Planning Committees,

[List Regions Here].

II. INTER-REGIONAL COORDINATION AGREEMENT

a. The following is the specific procedure for inter-Regional coordination which has been agreed upon by Regions (your region #), X, X, XX, XX, XX, XX, and XX which will be used by the Regions to coordinate with adjacent Regional Planning Committees.

i. An application-filing window is opened or the Region announces that it is prepared to begin accepting applications on a first-come/first-served basis.

ii. Applications by eligible entities are accepted.

iii. An application-filing window (if this procedure is being used) is closed after appropriate time interval.

iv. Intra-Regional review and coordination takes place, including a technical review resulting in assignment of channels.

v. After intra-Regional review, a copy of those frequency-specific applications requiring adjacent Region approval, including a definition statement of proposed service area, shall then be forwarded to the adjacent Region(s) for review. This information will be sent to the adjacent Regional, chairperson(s) using the CAPRAD database.

vi. The adjacent Region reviews the application. If the application is approved, a letter of concurrence shall be sent, via the CAPRAD database, to the initiating Regional chairperson within thirty (30) calendar days.

1. Dispute Resolution

1) If the adjacent Region(s) cannot approve the request, the adjacent Region shall document the reasons for partial or non-concurrence, and respond within 10 (Ten)-calendar days via email. If the applying Region cannot modify the application to satisfy the objections of the adjacent Region then, a working group comprised of representatives of the two Regions shall be convened within thirty (30) calendar days to attempt to resolve the dispute. The working group shall then report its findings within thirty (30) calendar days to the Regional chairperson's email (CAPRAD database). Findings may include, but not be limited to:

a. Unconditional concurrence;

b. Conditional concurrence contingent upon modification of Applicant's technical parameters; or

c. Partial or total denial of proposed frequencies due to inability to meet co-channel/adjacent channel interference free protection to existing licensees within the adjacent Region.

2) If the Inter-Regional Working Group cannot resolve the dispute, then the matter shall be forwarded for evaluation to the National Regional Planning Council (NRPC). . Each Region involved in the dispute shall include a detailed explanation of its position, including engineering studies and any other technical information deemed relevant. The NPOC will, within thirty (30) calendar days, report its recommendation(s) to the Regional chairpersons via the CAPRAD database. The NPOC's decision may support either of the disputing Regions or it may develop a proposal that it deems mutually advantageous to each disputing Region.

vii. Where adjacent Region concurrence has been secured, and the channel assignments would result in no change to the Region's currently Commission approved channel assignment matrix. The initiating Region may then advise the applicant(s) that their application may be forwarded to a frequency coordinator for processing and filing with the Commission.

viii. Where adjacent Region concurrence has been secured, and the channel assignments would result in a change to the Region's currently Commission approved channel assignment matrix, then the initiating Region shall file with the Commission a *Petition to Amend* their current Regional plan's frequency matrix, reflecting the new channel assignments, with a copy of the *Petition* sent to the adjacent Regional chairperson(s).

ix. Upon Commission issuance of an *Order* adopting the amended channel assignment matrix, the initiating Regional chairperson will send a courtesy copy of the *Order* to the adjacent Regional chairperson(s) and may then advise the applicant(s) that they may forward their applications to the frequency coordinator for processing and filing with the Commission.

III. CONCLUSION

a. IN AGREEMENT HERETO, Regions (your region #), X, XX, and XX do hereunto set their signatures the day and year first above written.

Respectfully,

[All signatures to agreement]

Date: _____

Appendix M-Simplified 700 MHz Pre-Assignment Rules and Recommendations

The link below is the National Coordination Committee (NCC) 700 MHz Pre-Assignment Rules and Recommendations which were developed to outline a recommended process for regional coordination of the initial block of 700 MHz channels by the region. This language can be beneficial to a region when determining criteria for coordination of channels in its region as envisioned in the NCC process but regions are not bound to the values or engineering practices identified herein but are able to identify the methods best suited to effectively coordinate channels in their region. The NRPC recommends regional planning committee personnel review the entire document when determining the best coordination practices for their region.

http://caprad.org/NlectcRm/Plans/Docs/x_Appendix_K_V2_0.pdf

Simplified 700 MHz Pre-assignment Rules Recommendation

Introduction

A process for doing the initial block assignments of 700 MHz channels before details of actual system deployments is required. In this initial phase, there is little actual knowledge of what specific equipment is to be deployed and where the sites will be. As a result, a high level simplified method is proposed to establish guidelines for frequency coordination. When actual systems are deployed, additional details will be known and the system designers will be required to select specific sites and supporting hardware to control interference.

Overview

Assignments will be based on a defined service area of each applicant. For Public Safety entities this will normally be a geographically defined area such as city, county or by a data file consisting of line segments creating a polygon that encloses the defined area.

For co-channel assignments, the **40 dBμ** contour will be allowed to extend beyond the defined service area by 3 to 5 miles, depending on the type of environment, urban, suburban or low density. The interfering co-channel **5 dBμ** will be allowed to

touch but not overlap the 40 dBμ contour of the system being evaluated. All contours are (50-50).

For **adjacent and alternate channels, the interfering channels 60 dBμ** will be allowed to touch but not overlap the 40 dBμ contour of the system being evaluated. All contours are (50,50).

Discussion

The FCC limits the maximum field strength to 40 dB relative to 1μV/m (customarily denoted as 40 dBμ). It is assumed that this limitation will be applied similarly to the way it is applied in the 821-824/866/869 MHz band. That is, a 40 dBμ field strength can be deployed up to a defined distance from the edge of the service area, based on the size of the service area or type of applicant, i.e. city, county or statewide system. This is important as the potential for interference from CMRS infrastructure demands that public safety systems have adequate margins for reliability in the presence of interference. The value of 40 dBμ corresponds to a signal of -92.7 dBm, received by a half-wavelength dipole (λ/2) antenna. The thermal noise floor for a 6.25 kHz receiver would be in the range of -126 dBm, so there is a margin of approximately 33 dB available for "noise limited" reliability. Figure 1 shows show the various interfering sources and how they accumulate to form a composite noise floor that can be used to determine the "reliability" or probability of achieving the desired performance in the presence of various interfering sources with differing characteristics.

Allowing for a 3 dB reduction in the available margin due to CMRS OOBE noise lowers the reliability and/or the channel performance of Public Safety systems. TIA TR8 made this allowance during the meetings in Mesa, AZ, January 2001. In addition, there are various channel bandwidths with different performance criteria and unknown adjacent and alternate channel assignments need to be accounted for. The co-channel and adjacent/alternate sources are shown in the right hand side of Figure 1. There would be a single co-channel source, but potentially several adjacent or alternate channel sources involved.

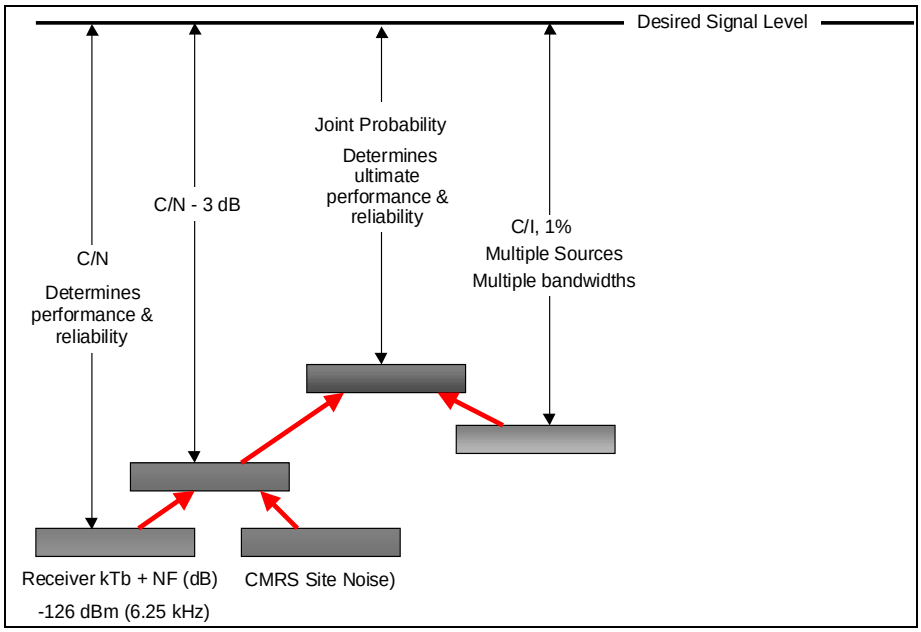


Figure 1 - Interfering Sources Create A "Noise" Level Influencing Reliability

It is recommended that co-channel assignments limit the C/I at the edge (worst case mile) be sufficient to limit that interference to <1%. A C/I ratio of 26.4 dB plus the required capture value required to achieve this goal. . A 17 - 20 dB C/N is required to achieve channel performance. Table 1 shows estimated performance considering the 3 dB noise floor rise at the 40 dB signal level. Performance varies due to the different Cf/N requirements of the different modulations and channel bandwidths. These values are appropriate for a mobile on the street, but are considerably short to provide reliable communications to portables inside buildings.

[1] See Appendix A for an explanation of how the 1% interference value is defined and derived.

Comparison of Joint Reliability for various configurations				
Channel Bandwidth	6.25 kHz	12.5 kHz	12.5 kHz	25.0 kHz
Receiver ENBW (kHz)	6	6	9	18
Noise Figure(10 dB)	10	10	10	10
Receiver Noise Floor (dBm)	-126.22	-126.22	-124.46	-121.45
Rise in Noise Floor (dB)	3.00	3.00	3.00	3.00
New Receiver Noise Floor (dB)	-123.22	-123.22	-121.46	-118.45
40 dBu = -92.7 dBm	-92.7	-92.7	-92.7	-92.7
Receiver Capture (dB)	10.0	10.0	10.0	10.0
Noise Margin (dB)	30.52	30.52	28.76	25.75
C/N Required for DAQ = 3	17.0	17.0	18.0	20.0
C/N Margin (dB)	**13.52**	**13.52**	**10.76**	**5.75**
Standard deviation (8 dB)	8.0	8.0	8.0	8.0
Z	1.690	1.690	1.345	0.718
Noise Reliability (%)	**95.45%**	**95.45%**	**91.06%**	**76.37%**
C/I for <1% prob of capture	36.4	36.4	36.4	36.4
I (dBu)	3.7	3.7	3.7	3.7
I (dBm)	-129.0	-129.0	-129.0	-129.0
Joint Probability (C & I)	**94.2%**	**94.2%**	**90.4%**	**75.8%**
40 dBu = -92.7 dBm @ 770 MHz				

Table 1 Joint Probability For Project 25, 700 MHz Equipment Configurations.

To analyze the impact of requiring portable in building coverage, several scenarios are presented. The different scenarios involve a given separation from the desired sites. Then the impact of simulcast is included to show that the 40 dBμ must be able to fall outside the edge of the service area. From the analysis, recommendations of how far the 40 dBμ extensions should be allowed to occur are made.

Table 2 Estimates urban coverage where simulcast is required to achieve the desired portable in building coverage. Several assumptions are required to use this estimate.

- Distance from the location to each site. Equal distance is assumed.
- CMRS noise is reduced when entering buildings. This is not a guarantee as the type of deployments is unknown. It is possible that CMRS units may have transmitters inside buildings. This could be potentially a large contributor unless the CMRS OOBE is suppressed to TIA's most recent recommendation and the "site isolation" is maintained at 65 dB minimum.
- The 40 dBμ is allowed to extend beyond the edge of the service area boundary.
- Other configurations may be deployed utilizing additional sites, lower tower heights, lower ERP and shorter site separations.

Estimated Performance at 2.5 miles from each site				
Channel Bandwidth	6.25 kHz	12.5 kHz	12.5 kHz	25.0 kHz
Receiver Noise Floor (dBm)	-126.20	-126.20	-124.50	-118.50
Signal at 2.5 miles (dBm)	-72.7	-72.7	-72.7	-72.7
Margin (dB)	53.50	53.50	51.80	45.80
C/N Required for DAQ = 3	17.0	17.0	18.0	20.0
Building Loss (dB)	20	20	20	20

Antenna Loss (dBd)	8	8	8	8
Reliability Margin	8.50	8.50	5.80	-2.20
Z	1.0625	1.0625	0.725	-0.275
Single Site Noise Reliability (%)	85.60%	85.60%	76.58%	39.17%
Simulcast with 2 sites	97.93%	97.93%	94.51%	62.99%
Simulcast with 3 sites	99.70%	99.70%	98.71%	77.49%
Simulcast with 4 sites	99.96%	99.96%	99.70%	86.30%

Table 2, Estimated Performance From Site(s) 2.5 Miles From Typical Urban Buildings.

Table 2 shows for the example case of 2.5 miles that simulcast is required to achieve public safety levels of reliability. The difference in performance margin requirements would require more sites and closer site to site separation for wider bandwidth channels.

Figures 2 and 3 show how the configurations would potentially be deployed for a typical site with 240 Watts ERP. This is based on:

- 75 Watt transmitter, 18.75 dBW
- 200 foot tower
- 10 dBd 180 degree sector antenna +10.0 dBd
- 5 dB of cable/filter loss. - 5.0 dB

23.75 dBW ≈ 240 Watts (ERPd)

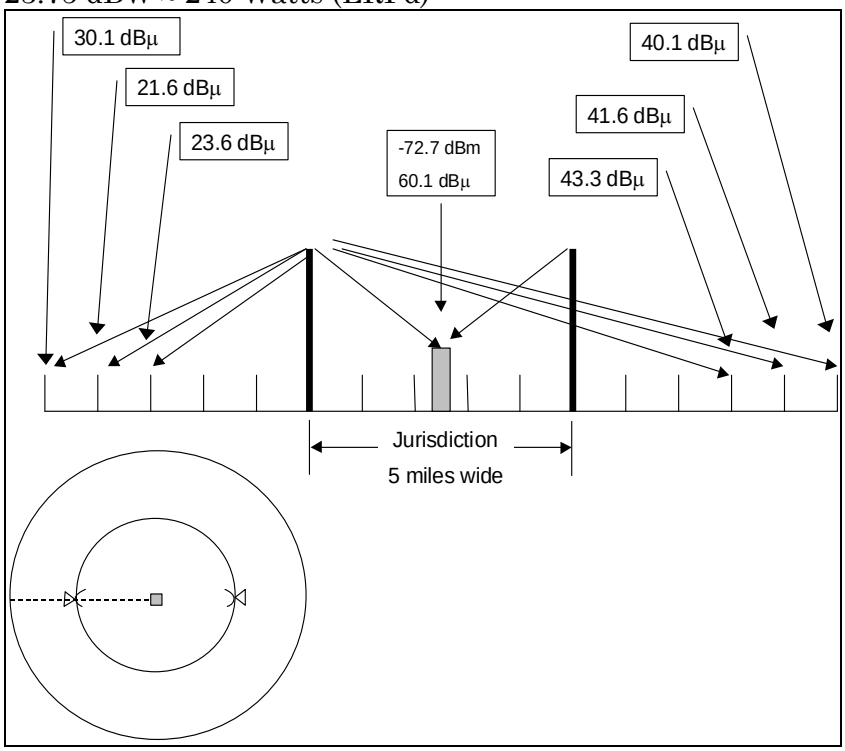


Figure 2 - Field Strength From Left Most Site.

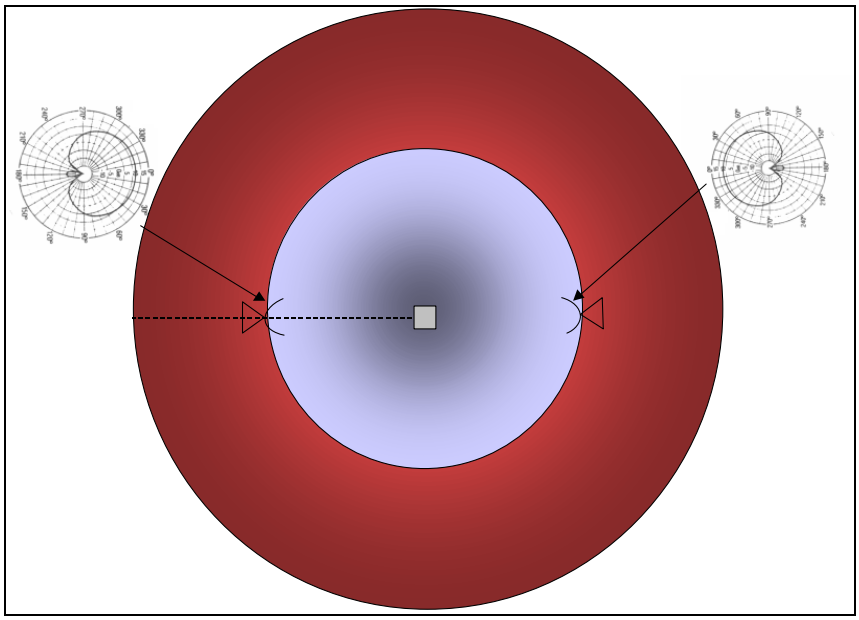


Figure 3 - Antenna Configuration Required To Limit Field Strength Off "Backside"

Figure 2 is for an urbanized area with a jurisdiction of a 5 mile circle. To provide the necessary coverage to portables in buildings at the center of the jurisdiction requires that the sites be placed along the edge of the service area utilizing direction antennas opriented toward the center of the service area (Figure 3). In this case, at 5 miles beyond the edge of the service area, the sites would produce a composite field strength of approximately 40 dBµ. Since one site is over 10 dB dominant, the contribution from the other site is not considered. The control of the field strength behind the site relies on a 20 dB antenna with a Front to Back Ratio (F/B) specification as shown in Figure 3. This performance may be optomistic due to back scatter off local obstructions in urbanized areas. However, use of antennas on the sides of buildings can assist in achieving better F/B ratios and the initial planning is not precise enough to prohibit using the full 20 dB.

The use of a single site at the center of the service area is not normally practical. To provide the necessary signal strength at the edge of the service area would produce a field strength 5 miles beyond in excess of 44 dBµ. However, if the high loss buildings were concentrated at the service area's center, then potentially a single site could be deployed, assuming that the building loss sufficiently decreases near the edge of the service area allowing a reduction in ERP to achieve the desired reliability.

Downtilting of antennas to control the 40 dBµ is not practical as the difference in angular discrimination from a 200 foot tall tower at 2.5 miles and 10 miles is approximately 0.6 degrees.

Tables 3 and 4 represent the same configuration, but for less dense buildings. In these cases, the distance to extend the 40 dBm can be determined from Table Z. Recommendations are made in Table 6.

Estimated Performance at 3.5 miles from each site				
Channel Bandwidth	6.25 kHz	12.5 kHz	12.5 kHz	25.0 kHz
Receiver Noise Floor (dBm)	-126.20	-126.20	-124.50	-118.50
Signal at 2.5 miles (dBm)	-77.7	-77.7	-77.7	-77.7
Margin (dB)	48.50	48.50	46.80	40.80
C/N Required for DAQ = 3	17.0	17.0	18.0	20.0
Building Loss (dB)	15	15	15	15
Antenna Loss (dBd)	8	8	8	8
Reliability Margin	8.50	8.50	5.80	-2.20
Z	1.0625	1.0625	0.725	-0.275
Single Site Noise Reliability (%)	**85.60%**	**85.60%**	**76.58%**	**39.17%**
Simulcast with 2 sites	97.93%	97.93%	94.51%	62.99%
Simulcast with 3 sites	99.70%	99.70%	98.71%	77.49%
Simulcast with 4 sites	99.96%	99.96%	99.70%	86.30%

Table 3 - Lower Loss Buildings, 3.5 Mile From Site(s)

Estimated Performance at 5.0 miles from each site				
Channel Bandwidth	6.25 kHz	12.5 kHz	12.5 kHz	25.0 kHz
Receiver Noise Floor (dBm)	-126.20	-126.20	-124.50	-118.50
Signal at 2.5 miles (dBm)	-82.7	-82.7	-82.7	-82.7
Margin (dB)	43.50	43.50	41.80	35.80
C/N Required for DAQ = 3	17.0	17.0	18.0	20.0
Building Loss (dB)	10	10	10	10
Antenna Loss (dBd)	8	8	8	8
Reliability Margin	8.50	8.50	5.80	-2.20
Z	1.0625	1.0625	0.725	-0.275
Single Site Noise Reliability (%)	**85.60%**	**85.60%**	**76.58%**	**39.17%**
Simulcast with 2 sites	97.93%	97.93%	94.51%	62.99%
Simulcast with 3 sites	99.70%	99.70%	98.71%	77.49%
Simulcast with 4 sites	99.96%	99.96%	99.70%	86.30%

Table 4 - Low Loss Buildings, 5.0 Miles From Site(s)

Note that the receive signals were adjusted to offset the lowered building penetration loss. This produces the same numerical reliability results, but allows increasing the site to building separation and this in turn lowers the magnitude of the "overshoot" across the service area.

Table 5 shows the field strength for a direct path and for a path reduced by a 20 dB F/B antenna. This allows the analysis to be simplified for the specific example being discussed.

Overshoot Distance (mi)	Field Strength (dBμ)	20 dB F/B (dBμ)
1	73.3	53.3

2	63.3	43.3
2.5	60.1	40.1
3	57.5	37.5
4	53.3	33.5
5	50.1	30.1
…	…	
10	40.1	
11	38.4	
12	37.5	
13	36.0	
14	34.5	
15	33.0	

Table 5 - Field Strength Vs. Distance From Site

This allows the overshoot to be 11 miles so the extension of the 40 dBm can be 4 miles for surbanized territory . For the more rural territory, the limit is the signal strength off the back of the antenna. So the result is that for various types of urbanized areas the offset of the 40 dBm should be:

Type of Area	Extension (mi.)
Urban (20 dB Buildings)	5
Suburban (15 dB Buildings)	4
Rural (10 dB Buildings)	3

Table 6 - Recommended Extension Distance Of 40 Dbμ Field Strength

The 40 dBμ can then be constructed based on the defined service area without having to perform an actual prediction. Since the 40 dBμ is beyond the edge of the service area, some relaxation in the level of I is reasonable. Therefore a 35 dB ration is recommended and is consistent with what is currently being licensed in the 821-824/866-869 MHz Public Safety band.

Co-Channel Recommendation

- Allow the constructed 40 dBμ (50,50) to extend beyond the edge of the defined service area by the distance indicated in Table 6.
- Allow the Interfering 5 dBμ (50,50) to intercept but not overlap the 40 dBμ contour.

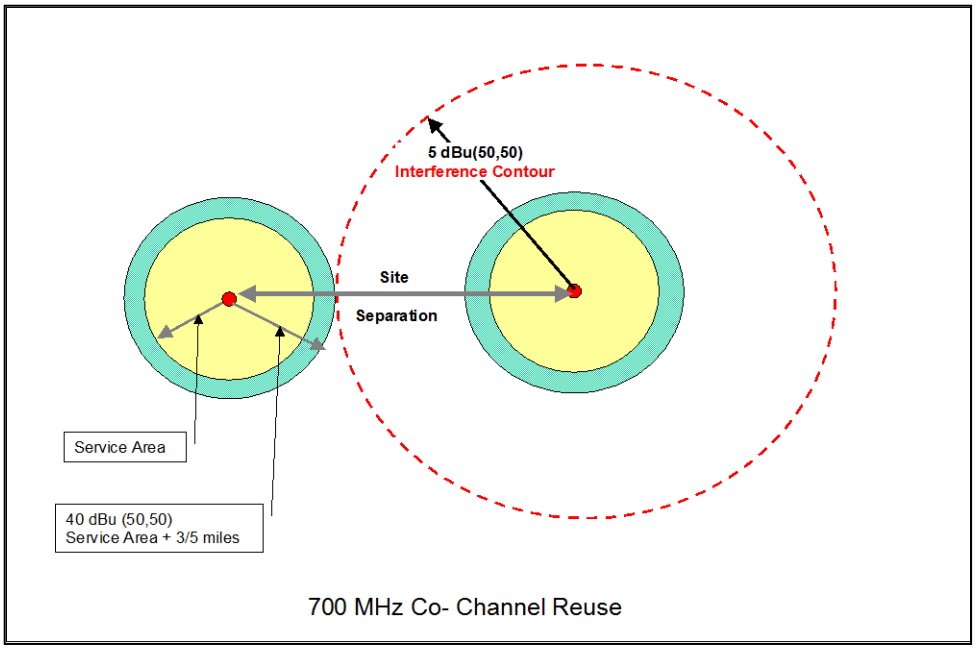


Figure 4 - Co-Channel Reuse Criterion

Adjacent and alternate Channel Considerations

Adjacent and alternate channels are treated as being noise sources that alter the composite noise floor of a victim receiver. Using the 47 CFR § 90.543 values of ACCP can facilitate the coordination of adjacent and alternate channels. The C/I requirements for <1% interference can be reduced by the value of ACCPR. For example to achieve an X dB C/I for the adjacent channel that is -40 dBc a C/I of [X-40] dB is required. Where the alternate channel ACP value is -60 dBc, then the C/I = [X-60] dB is the goal for assignment(s). There is a compounding of interference energy, as there are numerous sources, i.e. co channel, adjacent channels and alternate channels plus the noise from CMRS OOBE.

There is insufficient information in 47 CFR § 90.543 to include the actual receiver performance. Receivers typically have "skirts" that allow energy outside the bandwidth of interest to be received. In addition, the FCC defines ACCP differently than does the TIA. The term used by the FCC is the same as the TIA definition of ACP. The subtle difference is that ACCP defines the energy intercepted by a defined receiver filter. ACP defines the energy in a measured bandwidth that is typically wider than the receiver. As a result, the FCC values are optimistic at very close spacing and somewhat pessimistic at wider spacings, as the typical receiver filter is less than the channel bandwidth.

In addition, as a channel bandwidth is increased, the total noise is allowed to rise as it is initially defined in a 6.25 kHz channel bandwidth. However, the effect is diminished at very close spacings as the noise is rapidly falling off. At greater

spacings, the noise is essentially flat and the receiver's filter limits the noise to the specified 3 dB rise in the thermal noise floor.

Digital receivers tend to be less tolerant to interference than analog. Therefore a 3 dB reduction in the C/(I+N) can reduce a DAQ = 3 to a DAQ = 2 which is threshold to complete receiver muting. Therefore at least 17 dB plus the margin for keeping the interference below 1% probability requires a total margin of 43.4 dB. However, this margin would be at the edge of the service area and the 40 dBμ is allowed to extend past the edge of the service area.

Frequency drift is controlled by the FCC requirement for 0.4-ppm stability when locked. This equates to approximately a 1 dB standard deviation, which is negligible when associated with the recommended initial lognormal standard deviation of 8 dB and can be ignored.

Project 25 requires that a transceiver receiver have an ACIPR of 60 dB. This implies that an ACCPR ≥ 65 dB will exist for a "companion receiver". A companion receiver is one that is designed for the specific modulation. At this time the highest likelihood is that receivers will be deploying the following receiver bandwidths at the following channel bandwidths.

Estimated Receiver Parameters	
Channel Bandwidth	Receiver Bandwidth
6.25 kHz	5.5 kHz
12.5 kHz	5.5 or 9 kHz
25 kHz	18.0 kHz

Table 7 - Estimated Receiver Parameters

Based on 47 CFR ¶ 90.543 and the P25 requirement for an ACCPR ≥ 65 dB into a 6.0 kHz channel bandwidth and leaving room for a migration from Phase 1 to Phase 2, allows for making the simplifying assumption that 65 dB ACCPR is available for both adjacent 25 kHz block.

Base initial (presorts) on 25 kHz channels. This provides the maximum flexibility by using 65 dB ACCPR for all but one possible combination of 6.25 kHz channels within the 25 kHz allotment.

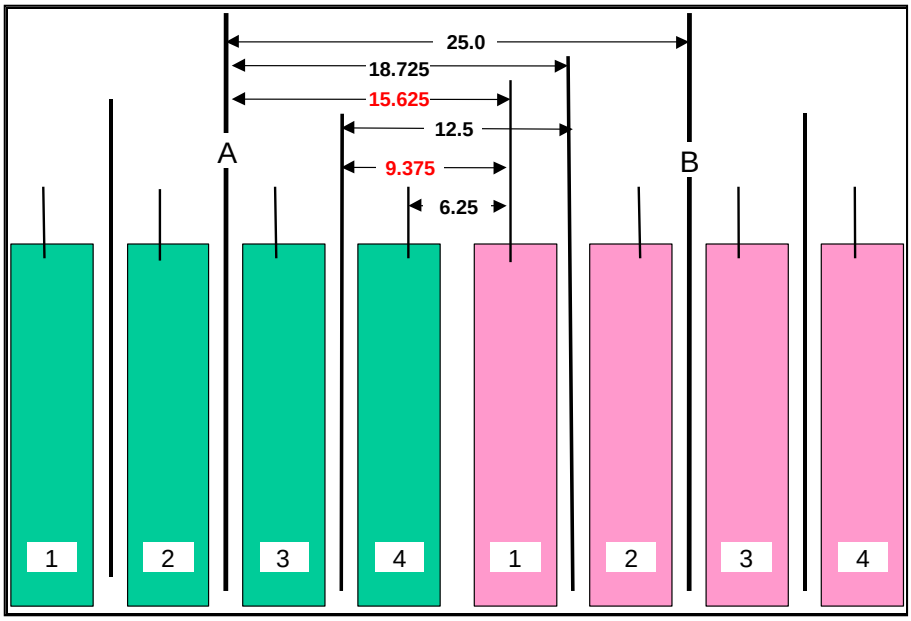


Figure 5, Potential Frequency Separations

Case	ACCPR
25 kHz	65 dB
18.725 kHz	65 dB
15.625 kHz	>40 dB
12.5 kHz	65 dB
9.375 kHz	>40 dB
6.25 kHz	65 dB

Table 8 - ACCPR Values For Potential Frequency Separations

All cases meet or exceed the FCC requirement. The most troublesome cases occur where the wider bandwidths are working against a Phase 2 narrowband 6.25 kHz channel. If system designers keep this consideration in mind and move the edge 6.25 kHz channels inward on their own systems, then a constant value of 65 dB ACCPR can be applied across all 25 kHz channels regardless of what is eventually deployed.

For other blocks, it must be assumed that transmitter filtering in addition to transmitter performance improvements with greater frequency separation will further reduce the ACCPR.

Therefore it is recommended that a consistent value of 65 dB ACCPR be used for coordinating adjacent 25 kHz channel blocks. Rounding to be conservative due to the possibility of multiple sources allows the "I" contour to be approximately 20 dB above the 40 dBμ contour, 60 dBμ.

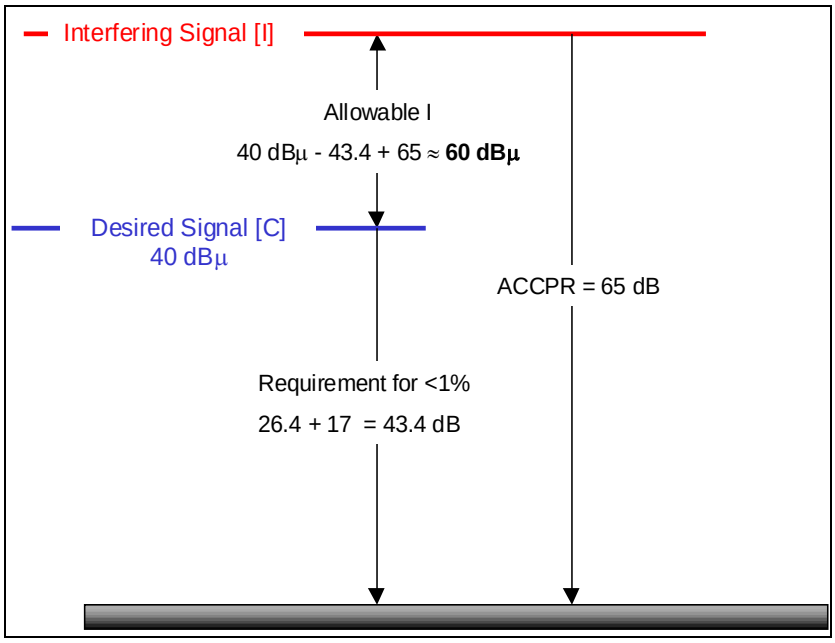


Figure 6 - Adjusted Adjacent 25 kHz Channel Interfering Contour Value

An adjacent Interfering (25 kHz) channel shall be allowed to have its 60 dBμ (50,50) contour touch but not overlap the 40 dBμ (50,50) contour of a system being evaluated. Evaluations should be made in both directions.

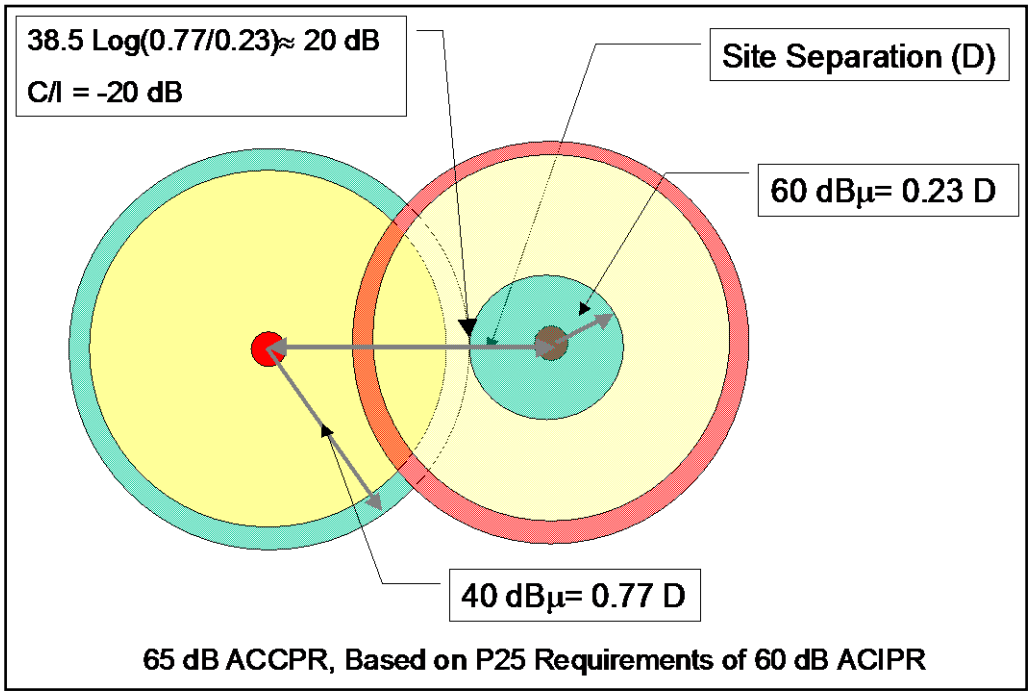


Figure 7 - Example Of Adjacent/Alternate Overlap Criterion

This simple method is only adequate for presorting large blocks to potential entities. A more detailed analysis should be executed in the actual design phase to take all the issues into consideration. Additional factors that should be considered include:

- Degree of Service Area Overlap
- Different size of Service Areas
- Different ERPs and HAATs
- Actual Terrain and Land Usage
- Differing User Reliability Requirements
- Migration from Project 25 Phase 1 to Phase 2
- Actual ACCP
- Balanced Systems
- Mobiles vs. Portables
- Use of voting
- Use of simulcast
- Radio specifications
- Simplex Operation
- Future unidentified requirements.

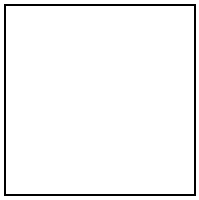
Special attention needs to be paid to the use of simplex operation. In this case, an interferer can be on an offset adjacent channel and in extremely close proximity to the victim receiver. This is especially critical in public safety where simplex operations are frequently used at a fire scene or during police operation. This type operation is also quite common in the lower frequency bands. In those cases, evaluation of base to base as well as mobile to mobile interference should be considered and evaluated.

Carrier to Interference Requirements

There are two different ways that Interference is considered.

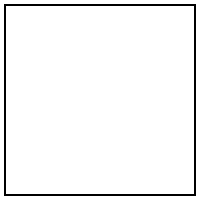
- Co Channel
- Adjacent and Alternate Channels

Both involve using a C/I ratio. The C/I ratio requires a probability be assigned. For example, a 10% Interference is specified, the C/I implies 90% probability of successfully achieving the desired ratio. At 1% interference, means that there is a 99% probability of achieving the desired C/I.



(1)

This can also be written in a form using the standard deviate unit (Z). In this case the Z for the desired probability of achieving the C/I is entered. For example, for a 90% probability of achieving the necessary C/I, $Z = 1.28$.



(2)

The most common requirements for several typical lognormal standard deviations (σ) are included in the following table based on Equation (2).

Location Standard Deviation (σ) dB	5.6	6.5	8	10
Probability %				
10%	10.14 dB	11.77 dB	14.48 dB	18.10 dB
5%	13.07 dB	15.17 dB	18.67 dB	23.33 dB
4%	13.86 dB	16.09 dB	19.81 dB	24.76 dB
3%	14.90 dB	17.29 dB	21.28 dB	26.20 dB
2%	16.27 dB	18.88 dB	23.24 dB	29.04 dB
1%	18.45 dB	21.42 dB	26.36 dB	32.95 dB

Table A1 - Probability Of Not Achieving C/I For Various Location Lognormal Standard Deviations

These various relationships are shown in Figure A1, a continuous plot of equation(s) 1 and 2.

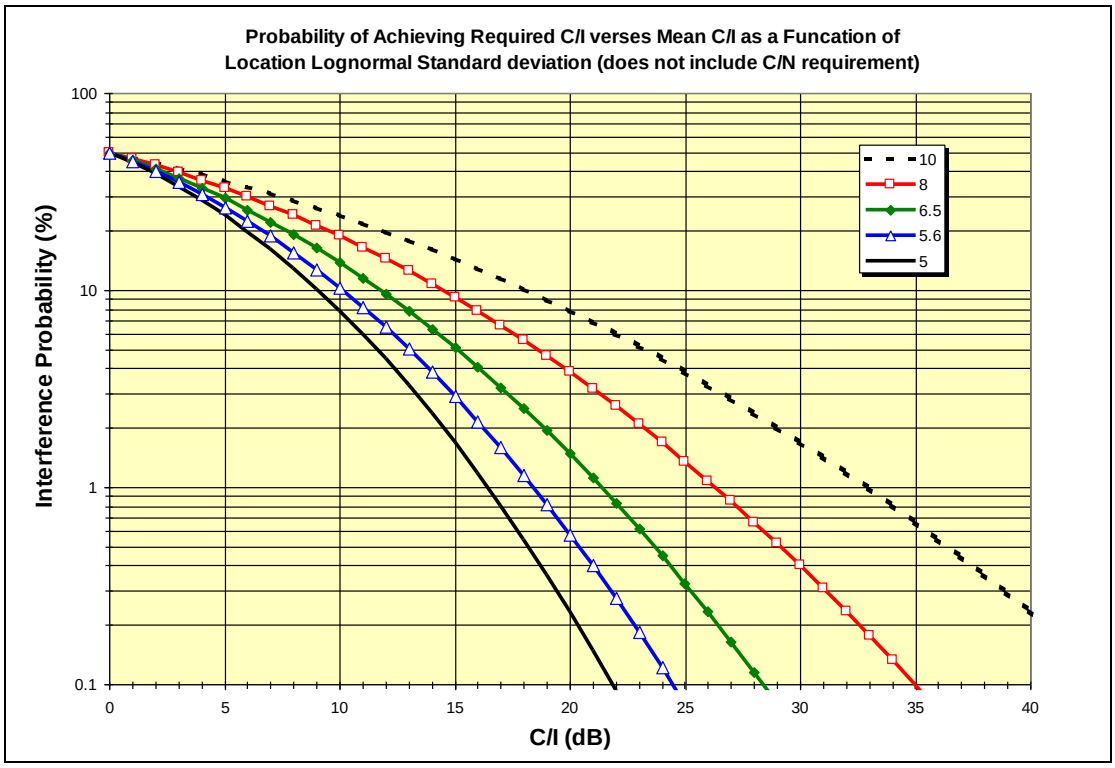


Figure A1, Probability Of Achieving Required C/I As A Function Of Location Standard Deviation

For co-channel the margin needs to include the "capture" requirement. When this is done, then a 1% probability of co channel interference can be rephrased to mean, there is a 99% probability that the "capture ratio" will be achieved. The capture ratio varies with the type of modulation. Older analog equipment has a capture ratio of approximately 7 dB. Project 25 FDMA is specified at 9 dB. Figure A1 shows the C/I requirement without including the capture requirement.

The 8 dB value for lognormal location standard deviation is reasonable when little information is available. Later when a detailed design is required, additional details and high-resolution terrain and land usage databases will allow a lower value to be used. The TIA recommended value is 5.6 dB. This provides the additional flexibility necessary to complete the design

To determine the desired probability that both the C/N and C/I will be achieved requires that a joint probability be determined. Figure A2 shows the effects of a family of various levels of C/N reliability and the joint probability (Y-axis) in the presence of various probabilities of Interference. Note that at 99% reliability with 1% interference (X-axis) that the reduction is nearly the difference. This is because the very high noise reliability is degraded by the interference, as there is little probability that the noise criterion will not be satisfied. At 90%, the 1% interference has a greater likelihood that it will occur simultaneously when the noise criterion not being met, resulting is a less degradation of the 90%

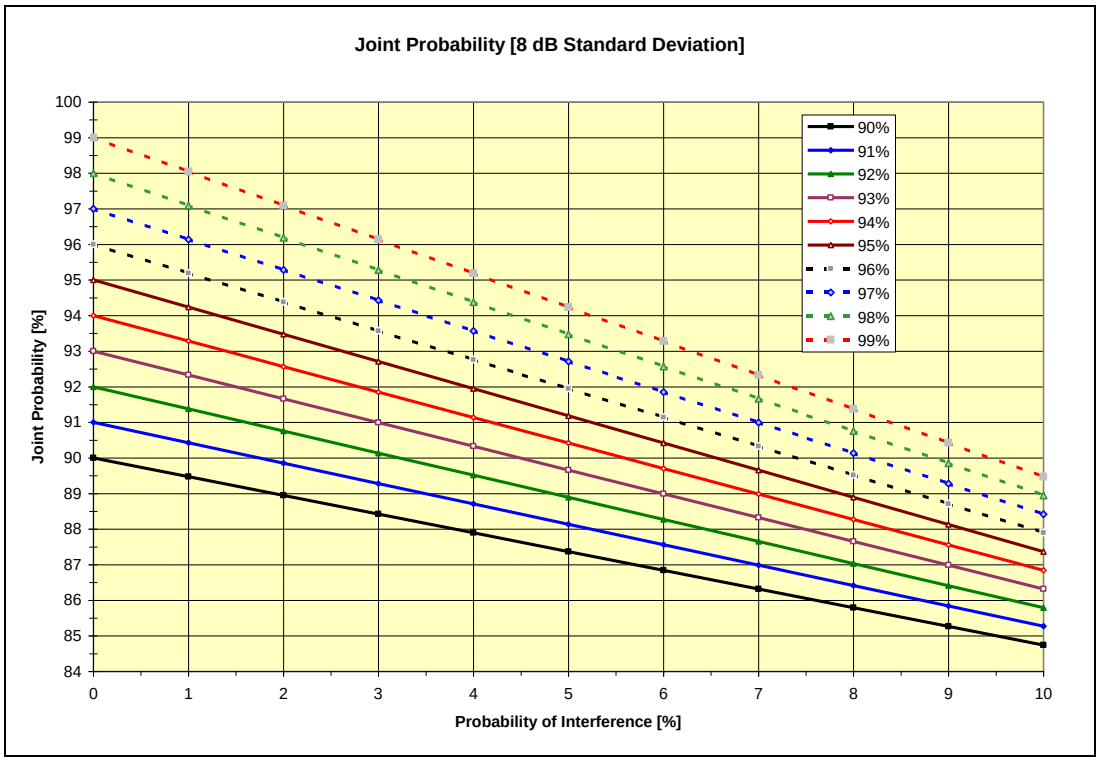


Figure A2 - Effect Of Joint Probability On The Composite Probability

For adjacent and alternate channels, the channel performance requirement must be added to the C/I ratio. When this is applied, then a 1% probability of adjacent/alternate channel interference can be rephrased to mean, there is a 99% probability that the "channel performance ratio" will be achieved.